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**Strategic Approach
to International
Chemicals Management**

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**The Strategic Approach and the sound management of
chemicals and waste beyond 2020: considerations for the
sound management of chemicals and waste beyond 2020**

**Annotations to the paper by the Co-Chairs of the intersessional
process on the Strategic Approach to International Chemicals
Management and the sound management of chemicals and
waste beyond 2020**

Note by the secretariat

The present information document provides additional considerations to the paper by the Co-Chairs on the Strategic Approach and the sound management of chemicals and waste beyond 2020 (SAICM/OEWG.3/4). The annotations provide further background information for participants and have not been formally edited.

* SAICM/OEWG.3/1.

Annex

Annotations to the paper by the Co-Chairs of the intersessional process on the Strategic Approach to International Chemicals Management and the sound management of chemicals and waste beyond 2020

I. Introductory remarks from the Co-Chairs to the third meeting of the Open-ended Working Group

A. Background

The Strategic Approach to International Chemicals Management was initiated in 2006 with the overall objective “to achieve the sound management of chemicals throughout their life-cycle so that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.” Implementation of the Strategic Approach is overseen by the International Conference on Chemicals Management – a multi-sectoral, multi-stakeholder forum.

The Strategic Approach provides a platform for sectors and stakeholders to work together voluntarily to protect human health and the environment from the harmful effects of chemicals across their life cycle. The Strategic Approach exists within and supports the broader context of the global sound management of chemicals and waste that includes legally binding approaches such as the multilateral environmental agreements, the International Health Regulations (2005), and certain conventions of the International Labour Organization (ILO), among others.

At its fourth session, in 2015, the Conference recognized the need to start considering arrangements for the period beyond 2020. Specifically, the Conference initiated an intersessional process to prepare recommendations on the Strategic Approach and the sound management of chemicals and waste beyond 2020 (the intersessional process) for consideration by the Conference at its fifth session, to be held from 5 to 9 October 2020, in Bonn, Germany. It was decided that the intersessional process should include two meetings prior to the third meeting of the Open-ended Working Group, to be held from 2 to 4 April 2019 in Montevideo, and one meeting between the third meeting of the Open-ended Working Group and the fifth session of the Conference. In addition, the Open-ended Working Group may consider the need to call an additional meeting of the intersessional process before the fifth session of the Conference.

The first meeting of the intersessional process was held from 7 to 9 February 2017 in Brasilia, and the second meeting was held from 13 to 15 March 2018 in Stockholm. Information on those meetings is available on the Strategic Approach website.¹

At the end of the second meeting of the intersessional process, drawing attention to the need to make further progress, all regions and sectors requested the Co-Chairs to develop a paper for submission to the third meeting of the Open-ended Working Group to be used as a basis for discussions. The Co-Chairs were to develop the paper in consultation with the Bureau and with the support of the secretariat; the paper would be based on the outcomes of the first and second intersessional meetings and take into account stakeholder submissions and the outcomes of the most recent regional meetings.

In keeping with Conference resolution IV/4, the we have considered the 2030 Agenda for Sustainable Development, resolution 1/5 of the United Nations Environment Assembly and the related outcome document on strengthening the sound management of chemicals and waste in the long term (UNEP/EA.1/5/Add.2) in the development of the present paper.

In paragraph 12 of its resolution IV/4, the Conference directed the Open-ended Working Group to consider the conclusions of the independent evaluation of the Strategic Approach for the period 2006–2015 and any recommendations identified by the intersessional process for consideration by the Conference at its fifth session.

In keeping with Conference resolution IV/4, the we have also considered the following in the development of the paper:

- The draft independent evaluation of the Strategic Approach for the period 2006–2015;

¹ www.saicm.org.

- The overall orientation and guidance for achieving the 2020 goal of sound management of chemicals;²
- The Dubai Declaration on International Chemicals Management (SAICM/ICCM.1/7, annex I) and the Overarching Policy Strategy (ibid, annex II);
- World Health Assembly resolution 69.4 and the ensuing road map of the World Health Organization to strengthen the engagement of the health sector in the implementation of the Strategic Approach;³
- Other pertinent documents and reports of the International Conference on Chemicals Management, the Open-ended Working Group, regional meetings, relevant resolutions from other forums and other relevant documents.

The third meeting of the Open-ended Working Group will also be informed by the findings of the second edition of the *Global Chemicals Outlook*.

B. Context

We have heard diverse views on the scope of the intersessional process. Many stakeholders have indicated a desire for the Strategic Approach (or a similar voluntary instrument) to continue, though with some modifications to the model, which would include enhanced sectoral engagement and improved implementation arrangements. Others have suggested that the conversation also needs to be about a broader, global strategy or framework that encompasses both voluntary and legally binding institutional arrangements (existing and possibly new ones) relevant to chemicals and waste under one umbrella. In that regard, the Open-ended Working Group may consider that a broader initiative would require the governing bodies of all implicated organizations and instruments to signal their interest in being part of such an initiative before it could be formally adopted.

In paragraph 9 of the Dubai Declaration, ministers, heads of delegations and representatives of civil society and the private sector declared that they were determined to implement the applicable chemicals management agreements to which they were Party, to strengthen the coherence and synergies that existed between them and to work to address, as appropriate, existing gaps in the framework of international chemicals policy.

A major driving force for the establishment of the Strategic Approach, as set out in paragraph 5 of the Overarching Policy Strategy, was the recognition of the growing gaps between the capacities of different countries to manage chemicals safely, the need to improve synergies between existing instruments and processes and the growing sense of urgency regarding the need to assess and manage chemicals more effectively to achieve the 2020 goal articulated in paragraph 23 of the Johannesburg Plan of Implementation (ibid, appendix).

Since the Strategic Approach was established in 2006, much has been done to improve chemicals management. As set out in the lessons learned of the draft independent evaluation report, the Strategic Approach was conceived as a multi-sectoral and multi-stakeholder approach, and integration across sectors is a key pathway to its success. The progress made to date in support of the 2020 objective will be further enhanced with greater efforts to broaden sector and stakeholder engagement beyond 2020 in line with the 2030 Agenda. Increased representation of the health, agriculture, finance and industrial sectors among government, national and regional focal points will support efforts to mainstream the sound management of chemicals across government departments. Among non-government stakeholders, continued efforts to communicate with and reach out to downstream businesses and industries, as well as civil society more broadly, will further support this pathway.

It is recognized that the current global approach remains fragmented, and an overarching platform could enhance cooperation and collaboration among relevant stakeholders and sectors, while building capacity, increasing overall efficiency and accelerating actions for the sound management of chemicals and waste. The global platform would have the purpose of providing an overarching umbrella to promote work and collaboration across existing entities, while respecting their individual legal autonomy.

With that in mind, the Co-Chairs propose that stakeholders at the third meeting of the Open-ended Working Group contemplate the following:

² Available at www.saicm.org/Resources/Publications/tabid/5507/language/en-US/Default.aspx.

³ Ibid.

(a) Making recommendations for a voluntary, multi-sectoral and multi-stakeholder instrument that would be forwarded for consideration and decision at the fifth session of the Conference, building on the current Strategic Approach and allowing for continuity of current relevant efforts, such as those to identify gaps, build capacity and implement chemicals management schemes. This is the focus of the present paper and, for the purpose of related discussions, it could be referred to as “SAICM 2.0”.⁴

(b) Considering a possible broader platform to address the fragmented nature of initiatives and agreements to promote international chemicals and waste management. While developing the approach in item (a) above, it was felt by many that the vision, strategic objectives and targets developed would also apply to a broader platform for the sound management of chemicals and waste. Specifically, it is proposed that the Open-ended Working Group consider the applicability of the vision, objectives and targets to a broader platform that could influence the overall sound management of chemicals and waste.

Seeking high-level engagement could garner awareness and support for international work on chemicals and waste. That could result in increased momentum and the focusing of resources in a coordinated way across the full multi-sectoral scope of chemicals and waste activities. For example, recommendations from the fifth session of the Conference could be forwarded to the General Assembly. A resolution of the General Assembly could then be forwarded by member countries to the most relevant governing bodies, as appropriate (e.g. the conference of the Parties to multilateral environmental agreements, the World Health Assembly, the Environment Assembly, the International Labour Conference and the Food and Agriculture Organization of the United Nations) for them to agree on the appropriate actions for that body as set out in the General Assembly resolution.

If desired by the third meeting of the Open-ended Working Group, discussions on this broader platform could be further elaborated by participants at the upcoming intersessional process regarding: (a) the scope, role, function and governance of that broader platform; (b) the process for the further development of such a broader platform towards presenting recommendations at the fifth session of the Conference. Those discussions and their outcomes would contribute and be without prejudice to discussions occurring in other forums.

Finally, we would like to highlight that there are different views on the scope of waste to be addressed beyond 2020, and further discussion is needed in that regard.

II. Co-Chairs’ Paper: Sound management of chemicals and waste beyond 2020

A. Preamble

Considerations⁵

A preamble could be developed and considered at a later date in the process, for example at the third meeting of the intersessional process. If a preamble is pursued, it could be largely based on pre-existing text from the Dubai Declaration, the 2030 Agenda, resolution IV/4 of the Conference, relevant resolutions and declarations from other forums, and other relevant texts.

The third meeting of the Open-ended Working Group may wish to discuss the anticipated outcomes of the fifth session of the Conference and how they would relate to a potential preamble and future declarations, and consider whether to develop proposed text in moving forward.

B. Introduction

Considerations

The proposed introduction and structure outlined in the present paper is modelled after the Overarching Policy Strategy, taking into account discussions and stakeholder input during the intersessional process to date.

The range of global actions for the sound management of chemicals and waste fosters comprehensive multi-stakeholder, multi-sectoral national and international engagement and action, including both binding and non-binding approaches, and contributes to the 2030 Agenda.

⁴ Note that the proposed name would be reviewed and potentially revised moving forward.

⁵ Considerations have been set out within the present paper to provide an explanatory rationale to the reader.

Building on the results, experiences and lessons learned of the Strategic Approach from its initiation in 2006, the instrument proposed herein reflects the recognition of the need for increased engagement of sectors and stakeholders in working together to protect human health and the environment from the harmful effects of chemicals across their life cycle and waste.

The present document describes recommendations for a multi-stakeholder, multi-sectoral instrument for action and engagement that aims to accelerate progress and strengthen partnerships, in line with Sustainable Development Goal 17, to protect human health and the environment from the harmful effects of chemicals across their life cycle and waste.

C. Vision

The vision shared by all stakeholders is to protect human health and the environment from the harmful effects of chemicals and waste, to ensure healthy lives and a sustainable, safe planet for all.

Additional Considerations

A vision statement should as much as possible be tested against the following criteria – timeless, aspirational, inclusive, simple, positive, easy to communicate. The vision should also be inclusive to ensure all sectors can see themselves in it.

The development of a short communicative slogan could also be considered once the main vision has been finalised. One that was suggested during the discussion groups at the second intersessional meeting is: “Healthy [environment] [planet], healthy people!”. It has also been suggested that a communications consultant be hired to develop a possible slogan.

Note: The additional considerations provide further background information for participants in considering this paper.

D. Scope

The scope of the proposed instrument encompasses the environmental, economic, social, health, agricultural and labour aspects of managing chemicals and waste, in order to enhance sustainable development and circularity. The instrument takes due account of the instruments and processes that have been developed to date and is flexible enough to take account of new ones without duplicating efforts.

The involvement of all relevant sectors and stakeholders across the life cycle at the local, national, regional and global levels is critical to the sound management of chemicals and waste. Stakeholders include Governments, regional economic integration organizations, intergovernmental organizations, civil society, industries, businesses, the financial sector, workers, retailers and academia. Sectors are understood to be, but not limited to, agriculture, environment, health, education, finance, development, construction and labour.

Additional Considerations

This section builds on the language in section II of the current Strategic Approach Overarching Policy Strategy.

Overall, stakeholders have expressed the need for a continued broad scope, consistent with the three pillars of sustainable development. The involvement of all relevant sectors and stakeholders, at the local, national, regional and global levels will continue to be critical within the beyond 2020 context and it is proposed that the breadth of this engagement be captured under scope.

In follow-up discussions on how to extend the consideration of SAICM beyond that of only chemicals, it is proposed to use the word “circularity” to recognize the need for actions that will contribute to “closing the loop” of product lifecycles through greater recycling and re-use to the benefit of both the environment and human health while promoting the reduction of hazardous substances in the value chain as well as shifting towards more sustainable chemistry.

The findings of a number of ongoing initiatives and relevant documents including, sectoral priority documents and the second edition of the Global Chemicals Outlook will also further inform the discussions.

Once the objectives are clarified, we will have an opportunity to reflect on, identify and map further the stakeholders currently identified in the section above.

E. Principles and approaches

In developing and implementing the sound management of chemicals and waste, stakeholders should be guided by:

- (a) Principles and approaches in the following:
 - i. Transforming our world: the 2030 Agenda for Sustainable Development (2015);
 - ii. The Future We Want (2012);
 - iii. Guiding Principles on Business and Human Rights (2011);
 - iv. United Nations Declaration on the Rights of Indigenous Peoples (2007);
 - v. Dubai Declaration on International Chemicals Management (2006);
 - vi. Johannesburg Plan of Implementation (2002);
 - vii. United Nations Millennium Declaration (2000);
 - viii. Bahia Declaration on Chemical Safety (2000);
 - ix. Rio Declaration on Environment and Development (1992);
 - x. Agenda 21, in particular chapters 6, 8, 19 and 20 thereof (1992);
 - xi. Stockholm Declaration on the Human Environment, in particular principle 22 therein (1972).
- (b) The following agreements and programmes, where applicable:
 - i. Minamata Convention on Mercury (2017);
 - ii. International Code of Conduct on Pesticide Management (2014);
 - iii. International Health Regulations (2005);
 - iv. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (2004);
 - v. Stockholm Convention on Persistent Organic Pollutants (2004);
 - vi. ILO Convention No. 174 concerning the Prevention of Major Industrial Accidents (1997);
 - vii. ILO Convention No. 170 concerning Safety in the Use of Chemicals at Work (1993);
 - viii. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1992);
 - ix. Montreal Protocol on Substances that Deplete the Ozone Layer (1989).

The list above includes global principles, approaches and agreements. Stakeholders should also be guided by any relevant regional principles, approaches and agreements that are applicable to their specific region or a specific issue.

Additional Considerations

The starting point for this list was paragraph 20 of the OPS. The entries have been organised by date and updated with more recent agreements and declarations. The list was further developed with the consideration of new agreements coming in to force since the OPS was agreed to in 2006.

A number of views were expressed at the second meeting of the intersessional process ranging from the suggestion to create a new self-contained list of specific policy principles to guide the future approach, to having no principles listed at all and instead being guided by a strong vision with objectives and milestones.

Recognizing the importance of policy principles as well as efficiency and practicality, the co-chairs recommend referring to the principles and approaches already embodied by the above list of relevant declarations and agreements. We also recommend that this list be limited to declarations and agreements that are global in scope, specifically related to the management of chemicals and waste and agreed to at the highest levels. While this section has referenced a limited number of global agreements, principles and approaches, it is recognized that the sound management of chemicals and waste should also be informed by any future principles and approaches that are reflective of on-going innovation beyond our current thinking.

This approach will allow for more time and attention to be devoted to the scope, vision, objectives, targets and milestones, as well as further discussion on governance, mechanisms to support implementation and financial considerations.

F. Strategic objectives and targets for the sound management of chemicals and waste

The following strategic objectives will guide stakeholders in their efforts at all levels to address the sound management of chemicals and waste:

Strategic objective A: Measures are identified, implemented and enforced in order to prevent and minimize harm from chemicals throughout their life cycle and waste;

Strategic objective B: Comprehensive and sufficient knowledge, data, information and awareness is generated, available and accessible to all to enable informed decisions and actions;

Strategic objective C: Issues of concern that warrant global action are identified, prioritized and addressed;

Strategic objective D: Benefits are maximized and risks to human health and the environment are prevented through innovative and sustainable solutions and forward thinking;

Strategic objective E: The importance of the sound management of chemicals and waste to achieve sustainable development is recognized by all, actions are accelerated and necessary partnerships are established to foster interaction among stakeholders and to mobilize resources.

Targets to support the attainment of each objective are described in the appendix.

Additional Considerations

ICCM4 resolution IV/4 charged the intersessional process with, among other things, considering the need for and developing recommendations regarding measurable objectives in support of the 2030 Agenda for Sustainable Development. During the first two intersessional process meetings, we heard that objectives should, indeed, be developed and that they should be strategic, ambitious, measurable, limited in number and supported by achievable targets. We also heard objectives and targets will require adequate financial resources and mechanisms to support implementation.

Many suggestions have been submitted as to what these objectives should be, and there are many viable ways to organize and articulate the work required to reach the sound management of chemicals and waste. The objectives proposed above are intended to capture the main topics that have been suggested and to cover the entire scope of work ahead of us for the sound management of chemicals and waste beyond 2020. They are designed to be short, easily understood, and ambitious. The objectives are intended to be relevant for all chemicals and waste actors and organisations, at all levels, within their own mandates.

The co-chairs have also developed proposed targets to support each objective based on the ideas collected to date during the intersessional process and individual submissions. These are presented in Annex A. The ultimate goal will be to develop a practical programme of work that is achievable and measurable so that we can make and track progress toward the vision and objectives for beyond 2020. Reflections on the development of domestically relevant milestones could also be considered in moving forward.

The targets need to account for the fact that we all have different strengths, capacities, and roles and that we are at different places in our journey towards the sound management of chemicals and waste. The approach needs to be flexible to be able to accommodate future realities, such as shifting chemicals production, new technologies, and advancements in science and knowledge. The programme of work should help to align us all so that we can maximize our strengths and work toward our common vision together.

G. Institutional arrangements

Additional Considerations

While consultations within the intersessional process to date have focussed primarily on the identification of a common vision, a set of guiding principles and desired objectives to focus attention in the period beyond 2020, stakeholders have also recognized the need to further consider arrangements for how best to work together to achieve the vision and objectives.

Building on the results, experiences and lessons learned to date, the current process to consider SAICM and the sound management of chemicals and waste beyond 2020 provides an opportunity to improve implementation through inter and intra sectoral and stakeholder collaboration. Now is the time to re-energize political commitment and foster new partnerships and arrangements for a better future of collaboration and effort to prevent and reduce harm from chemicals and waste.

Throughout the intersessional process to date, stakeholders have raised the need to enhance awareness and engagement across multiple stakeholders and sectors and to foster improved engagement in, commitments to, and ownership of, respective roles to manage chemicals and waste effectively.

Overall stakeholders have indicated a desire for a multi-stakeholder, multi-sectoral venue to further the current work. Some have expressed a need for flexibility to develop (if and where needed) new legally binding elements for chemicals and waste issues not already covered by existing agreements; still others expressed the need for a broader entity to create a stronger partnership between both voluntary and existing legally binding instruments.

Below, the co-chairs have tried to offer a way forward based on their understanding of the ideas expressed to date and to provide a starting point for further discussion. It is also recognized this text may need to be reviewed should there be a decision to also establish a higher level platform, in order to ensure that the relationship between the two mechanisms is clear.

1. International conference ⁶

The international conference will undertake periodic reviews of the instrument. The functions of the international conference will be:

- i. To promote the implementation of existing international instruments and programmes on chemicals and waste and to promote coherence among them;
- ii. To promote the strengthening of national chemicals and waste management capacities;
- iii. To promote, enhance and support participation by and interaction among stakeholders and sectors in the international conference and in the programme of work;
- iv. To promote awareness of new developments and trends and identify links to sustainable development;
- v. To move the strategy forward and set priorities for the programme of work;
- vi. To determine processes to guide appropriate action on issues of global concern as they arise and to facilitate and forge consensus on and provide an avenue to focus attention on priorities for cooperative action;
- vii. To provide guidance to the secretariat and to stakeholders on implementation;
- viii. To establish and task technical, policy and/or science subsidiary and/or ad hoc expert bodies as appropriate;
- ix. To facilitate the mobilization of financial and technical resources for the operation and implementation of the sound management of chemicals and waste;
- x. To receive reports from all relevant stakeholders on progress in implementation and to disseminate information as appropriate;

⁶ Recognizing that stakeholders will need to reflect upon the title further, we are using the generic term “international conference”.

- xi. To evaluate and report on the implementation of programmes that are fulfilling the vision with a view to reviewing progress against the objectives, targets and milestones and updating the programme of work as necessary.

The international conference will have a high-level, multi-sectoral and multi-stakeholder segment. The function of that segment will be:

- i. To engage the commitment at the highest possible level of officials and representatives of all stakeholder groups to address the sound management of chemicals and waste;
- ii. To provide a high-level international forum for multi-stakeholder and multi-sectoral discussion and exchange of experience on chemicals and waste issues, in line with the 2030 Agenda, with the participation of non-governmental stakeholders in accordance with the applicable rules of procedure;
- iii. To promote the inclusion of sound management policies for chemicals and waste in national sustainable development plans and in relevant sectoral plans and budgets (in respect of, for example, the fields of health, labour, social issues, environment, agriculture, fisheries, forestry, research and education);
- iv. To strengthen linkages, partnerships and national coordination arrangements/mechanisms for chemicals and waste at the national, regional and international levels;
- v. To strengthen linkages, partnerships and national coordination arrangements/mechanisms for other relevant aspects and sectors, including biodiversity and climate change, and with other stakeholders of the 2030 Agenda at the national, regional and international levels.

Additional Considerations

The ICCM is the current decision-making body of SAICM. It is expected that a similar body will be needed in moving forward. Paragraph 24 of the OPS outlines the current functions of ICCM and the text proposed remains in line with this, with a few exceptions.

The list, in paragraph 1, above is sorted in order of functions: promote high level attention (i-iv); set strategy and priorities (v-vi); promote coordination (vii-viii); provide guidance on implementation (ix-x); and monitor progress on implementation (xi-xii).

Stakeholders will need to discuss whether the functions described remain relevant or if they should be modified in light of lessons learned and the needs beyond 2020. In particular, many stakeholders have expressed the desire for a more dynamic and action-oriented approach, one focused more on engaging in discussions on shared priorities, finding solutions, creating networks, collaboration and sharing best practices.

While SAICM has been recognized appreciatively for its multi-stakeholder and multi-sectoral approach, evidence suggests that this aspect needs to be further enhanced, particularly if it is to align with the 2030 Agenda for Sustainable Development.

Whether we are discussing SAICM2.0 or a broader platform, there is a clear desire to improve awareness of, engagement in and commitment to the sound management of chemicals and waste at the highest levels across multiple stakeholders and sectors in order to catalyse action and mobilize resources to attain our common vision. To this end, the co-chairs have heard views on the possible required elements of a high-level multi-sectoral, multi-stakeholder forum and have outlined these above, in paragraph 2.

Recognizing that further discussion and advice is required as to the most effective way to create such a forum, and whether this is a governance mechanism or simply an approach to raise the profile of chemicals and waste issues, the co-chairs are proposing the text above as a starting point for this conversation.

2. Bureau of the international conference

The international conference should have a Bureau with functions in accordance with the rules of procedure of the international conference. The Bureau should adequately represent the regions of the world as well as the multi-stakeholder and multi-sectoral nature of the beyond 2020 instrument.

Additional Considerations

It is probable that a Bureau will be required but depending on the outcomes of discussions on a forum for high-level engagement and a decision-making body, stakeholders will likely wish to revisit the functions and composition of the Bureau when establishing the rules of procedure.

3. Secretariat

The functions to be performed by the secretariat will be:

- i. To promote the establishment and maintenance of a network of stakeholders at the national, regional and, in the case of intergovernmental and non-governmental organizations, international levels;
- ii. To promote and facilitate the implementation of the sound management of chemicals and waste, including capacity-building and technical assistance, under the guidance of the international conference;
- iii. To continue to strengthen working relationships with participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) and their networks, other United Nations bodies and the secretariats of relevant international agreements in order to draw upon their sectoral expertise;
- iv. To facilitate and promote the exchange of relevant scientific and technical information, including the development and dissemination of guidance materials to support stakeholder implementation, as well as provide information clearinghouse services;
- v. To facilitate the meetings and intersessional work of the international conference as well as regional meetings, and to disseminate the reports and recommendations of the international conference, including to relevant global and regional organizations and institutions;
- vi. To support the functioning of technical, policy and/or scientific subsidiary and/or ad hoc expert bodies established by the international conference;
- vii. To promote, enhance and support the participation of all sectors and stakeholders in the international conference and the programme of work, including in meetings of the international conference and regional meetings;
- viii. To report to the international conference on implementation by all stakeholders.

Additional Considerations

The text is largely drawn from OPS paragraph 28 which describes the functions to be performed by the SAICM secretariat. Some additions and adjustments have been made, including to address the requirement for greater multi-stakeholder and multi-sectoral participation as well as to reflect the proposal that the International Conference should have the ability to form technical, policy and/or science subsidiary and/or ad hoc expert bodies and these would also require secretariat support.

The list above has been sorted in order of functions: support stakeholders to implement (i-v); facilitate meetings of the International Conference and other bodies (vi-viii); and report to the International Conference (ix).

The role of a secretariat in facilitating the implementation in the future cannot be understated. It will be a critical component of our success. However, recognizing that the mandate, governance, and functions of the secretariat will be dependent on the form and function of any future instrument, this has not been discussed at any length to date.

Careful consideration will need to be given as to how we can ensure the capacity of a secretariat to fulfill the important tasks that will be set before them. This could include a consideration of the relationship with and potential role of the IOMC organizations.

H. Mechanisms to support implementation

1. Rules of procedure

Considerations

Once the form and function of the new instrument have been further elaborated, stakeholders may wish to consider text on rules of procedure for the international conference. In that regard, the Rules of Procedure adopted at the second session of the International Conference on Chemicals Management remain relevant. It may be worthwhile to review and update, as appropriate and relevant, the rules established for the International Conference on Chemicals Management at its second session pursuant to its resolution II/1.

2. National implementation

- i. To sustain an integrated approach for the sound management of chemicals and waste, each Government should establish arrangements such as national plans of action for implementation on an inter-ministerial or inter-institutional basis, in consultation with stakeholders, so that concerned national department and stakeholder interests are represented and all relevant substantive areas are addressed.
- ii. To facilitate communication, nationally and internationally, each Government should designate or develop a network of national focal points that represent the multi-stakeholder and multi-sectoral nature of the instrument to communicate on the sound management of chemicals and waste matters. This would include invitations to participate in meetings and disseminate information. The national focal points should be representative of the country's inter-ministerial or inter-institutional arrangements, where such arrangements exist.
- iii. To support effective implementation, stronger efforts are required to ensure that national implementation involves the engagement of the appropriate range of stakeholders and sectors (e.g., health, agricultural and labour sectors) to address national priorities.

Additional Considerations

The text is taken from OPS paragraph 23 but, from the discussions to date, while national coordination mechanisms and national focal points will remain critical, this area will require more thought and further development. Paragraph iii has been developed by the co-chairs. It has been suggested that given the essential role of the National Focal Point as well as the need for greater multi-sectoral engagement, it may be useful for countries to designate an alternate focal point from another sector.

National action is at the core of achieving the sound management of chemicals and waste globally; therefore, the SAICM2.0 needs to be focussed on how to further enable national implementation.

Participants have said that national implementation systems should allow for governments and other stakeholders to set their own priorities and means to measure progress. It was suggested that agreed upon global objectives could still allow for national priority setting within a broad framework and that any such framework should be flexible enough to account for different national situations and allow for transparency and easy communication.

National action plans with periodic reporting and evaluation of progress have been suggested as a useful tool if sustainably funded. Capacity building is also an important component and mentoring programmes have been proposed whereby able countries, with the support of stakeholders such as industry, could support other countries to establish and implement national actions.

3. Regional and sectoral cooperation and coordination

- i. Priorities and capacities for implementation vary among regions and subregions according to their different economic and other circumstances.
- ii. Regional, interregional and sectoral collaboration play integral roles in supporting the sound management of chemicals and waste at all levels, including among trading partners and other regional organizations.

- iii. Regional meetings and coordination mechanisms play an important role in enabling stakeholders in each region to exchange experience and identify priority needs in relation to implementation, as well as to develop regional positions on key issues.
- iv. Regions and subregions are encouraged, where appropriate:
 - a. To identify common priorities;
 - b. To develop regional implementation plans for the sound management of chemicals and waste, and to consider regional or subregional approaches and projects;
 - c. To appoint a regional focal point.
- v. Regional focal points are to play a facilitative role within their regions, including undertaking activities determined at the regional level, such as chairing regional meetings, disseminating information of interest to focal points within their region, collecting views from national focal points on matters of interest to the region, identifying opportunities for regional cooperation, assisting in the flow of information and views from the region to its Bureau member, as appropriate, and reporting periodically on the outcomes of their regional meetings and other regional activities.

Additional Considerations

Participants, particularly during regional meetings, have expressed need for enhanced regional activities to improve sector engagement and sharing of information and approaches. Regional meetings provide a space to review progress in regional implementation and address regional priorities for the future. Regional action plans can also serve to prioritize regional issues and share results of common concern. There may be opportunities for greater focus on regional mobilization of resources and political support, particularly with regard to regional agencies and regional arms of international/intergovernmental organisations and bodies, as well as other forms of collaboration both within and between regions.

It should be noted, however, that regional cooperation need not be limited to groupings consistent with the UN regions used for Bureau designation because the needs of countries within a region can differ. Regional and intra-regional collaboration may focus on a specific sector, such as agriculture, and may be bilateral, trilateral, with exiting trading partners or other existing regional organisations.

The text put forward is largely drawn from ICCM2 resolution II/2 on regional activities and coordination. Stakeholders may wish to reflect on whether this text still captures the full extent of how regional, inter-regional and sectoral cooperation can support the sound management of chemicals and waste.

4. Engagement of intergovernmental bodies, international organizations, the Inter-Organization Programme for the Sound Management of Chemicals and chemicals and waste-related conventions

- i. Relevant intergovernmental bodies, international organizations, IOMC and chemicals and waste-related conventions should strengthen their engagement and support national implementation.
- ii. Intergovernmental bodies, international organizations, OMC and chemicals and waste-related conventions should coordinate relevant activities and programmes of work, in line with the 2030 Agenda and within their individual mandates. Regional conventions and programmes can also make a significant contribution to the sound management of chemicals and waste and should coordinate as relevant.

Additional Considerations

The text is taken from OPS paragraph 26(c), adapted to allow for the potential incorporation of the secretariats of the chemicals and waste-related conventions. Stakeholders, particularly the IOMC organizations, member states, the secretariats of and the Parties to the chemicals and waste-related conventions will need to consider this issue further.

The IOMC's stated purpose is to promote coordination of the policies and activities, pursued, jointly or separately to achieve the sound management of chemicals in relation to human health and the environment. In line with this, one or more of the IOMC organizations and/or the convention

secretariats have taken lead roles in facilitating progress on each of SAICM's emerging policy issues. They have also developed numerous guidance documents as well as the IOMC Toolbox for Decision Making in Chemicals Management.

At the second meeting of the intersessional process, the IOMC submitted a paper outlining future actions and policies beyond 2020 more specifically linked to the SDGs and the 2030 Agenda.

There is a need to emphasize the responsibility of each organization and the chemicals and waste-related conventions for the sound management of chemicals and waste, under their respective mandates. Regional Conventions and programmes can also make a significant contribution to the sound management of chemicals and waste and should coordinate as relevant.

Stakeholders have pointed out the importance of the policies, plans and actions of each IOMC organization, under its own mandate, for implementation of the sound management of chemicals and waste. Some stakeholders have also expressed a need for an enhanced and more coordinated role for IOMC organizations. However, there has not been significant discussion to date on how this could be achieved. Consideration could be given to how the IOMC Secretariat could play an enhanced role moving forward.

The IOMC organizations and the chemicals and waste convention secretariats have a pivotal role to play in facilitating the achievement of the sound management of chemicals and waste, and their various mandates would complement many of the potential components of the new instrument. Further, given that they represent many of the sectors that need to be engaged in the sound management of chemicals and waste, they may be able to make critically valuable contributions to facilitating and strengthening the multi-sectoral and multi-stakeholder engagement required for the instrument to be a success.

The WHO's Road map to enhance the health sector engagement in SAICM towards the 2020 goal and beyond, is a good example of this potential. However, the programme of work and allocation of resources for each organization is determined by their respective governing mechanisms. Their strengthened engagement may therefore depend on the ability of countries to appropriately influence these processes.

Recognizing the cross sectoral nature of the sound management of chemicals and waste and the important role that intergovernmental organizations play in supporting effective implementation, it is important that sufficient resources are allocated from intergovernmental organizations. Stakeholders should discuss and consider financing for IOMC organisations in relation to implementation beyond 2020. Governments and other stakeholders should consider methods and opportunities to prioritize the allocation of resources to IOMC organizations to support their engagement as set out in section (VII) (e). Intergovernmental organizations should allocate dedicated resources for the implementation of the sound management of chemicals and waste.

5. Engagement of non-government actors

- i. Non-government actors should continue to actively contribute expertise, data and knowledge to the sound management of chemicals and waste as an inherent part of the 2030 Agenda.

Civil society engagement

- ii. The meaningful participation of public-interest, non-governmental organizations (NGOs) and civil society organizations can make significant contributions to the implementation of the sound management of chemicals and waste. They can serve as effective chemical safety resources by generating data, raising public awareness and contributing to the design and implementation of chemical safety policies and programmes.

Industry and business engagement

- iii. Cooperative actions, capacity-building and mentoring by industries and businesses on global priorities can make significant contributions to the implementation of the sound management of chemicals and waste. This includes, among other things, voluntary industry initiatives, product stewardship, green chemistry and information exchange.
- iv. All industry sectors should participate in the development and implementation of legal requirements, policies, projects and partnerships on the sound management of chemicals and

waste. The stewardship of chemicals should include the full life cycle, including primary producers, the downstream manufacturing sector, distributors and vendors, building on existing initiatives where relevant. Both sector-specific and cross-sectoral strategies could be used to engage chemical producers and users.

Academia engagement

- v. Academia should contribute to and cooperate in the generation of relevant knowledge, data and information on the monitoring of chemicals and waste, including in respect of issues of concern that warrant global action.

Additional Considerations

The text is developed to help identify the role and emphasize the relevant responsibilities of non-government stakeholders.

6. Subsidiary and/or ad hoc expert bodies

The international conference should have the ability to establish subsidiary and/or ad hoc, time-limited groups to study and provide advice to the international conference on scientific, technical and/or policy issues not already covered by existing forums.

Such groups should be geographically balanced, transparent, flexible and academically credible; promote two-way dialogue between disciplines and between science and policy; promote awareness-raising activities; and incorporate strict standards of rigor, including peer review, to be approved by the international conference.

The functions could include but are not limited to:

- i. Identifying, prioritizing and providing recommendations to address chemicals and waste issues of global concern;
- ii. Facilitating implementation in developing countries, such as through basic regulatory schemes;
- iii. Assessing the scale, sources and health and environmental costs of chemical and waste, as well as analysing and developing response options;
- iv. Facilitating innovation and making recommendations that maximize the benefits of sustainable and safer alternatives;
- v. Developing indicators to support the effective review of the objectives, targets and milestones, as well as the effective functioning of the instrument.

Additional Considerations

SAICM has supported engagement of science, particularly through stakeholders involved in addressing emerging policy issues. IOMC agencies and the chemicals and waste related conventions currently already have existing science-policy capacity.

During the intersessional process, many participants stressed the need to further integrate science beyond 2020 and to increase the science policy interface and engage academia in activities related to sound management of chemicals and waste. Some participants made a call for increased transparent, flexible, scientifically sound and academically robust engagement beyond 2020. This would include the need for two-way dialogue, at all levels, between the science community and policy-makers as well as awareness raising amongst scientists. Life-cycle analysis can further support the connection between science and policy.

There is a common understanding that efforts should not be duplicated and the funds available for science-policy interface functions will likely be limited. The role and relationship and potential contribution of the Global Chemicals Outlook and similar foresight documents may also need to be considered.

In suggesting the text above, the co-chairs are proposing a path forward that takes into account the views expressed so far by all stakeholders and allows for discussion about actions that could be taken on this issue through the future instrument. The potential role of IOMC organizations in these technical working groups should also be considered.

7. Other mechanisms to support implementation

Considerations

Once the mechanisms addressed in subsections 1 to 6 above have been determined, other mechanisms to support implementation may also be discussed, for example:

- *Appropriate and effective mechanisms for taking stock of progress;*
- *Mechanisms for capacity-building;*
- *A mechanism to update the instrument over time;*
- *Mechanisms for collaboration and multi-sectoral/multi-stakeholder engagement.*

I. Financial considerations

Additional Considerations

Stakeholders of the intersessional process have expressed that adequate, sustainable and predictable financing, including for the secretariat, is crucial to addressing the sound management of chemicals and waste beyond 2020.

In addition, the Draft Independent Evaluation states that much of the success of SAICM and the pathways to the 2020 goal depend on sufficient levels of financing and resources and notes that the main source of funding for SAICM over the 2006-2015 period has come from a limited set of donor contributions.

1. Integrated approach to financing

Stakeholders will take steps to implement an integrated approach to financing the sound management of chemicals and waste, including, in particular, making tangible progress with respect to the following three components:

(a) Mainstreaming

National Governments should integrate sound chemical management into their development plans and priorities. For developing countries and countries with economies in transition, the mainstreaming of their national chemicals and waste priorities into the development planning processes for funding as part of official development assistance will increase their access to significant funding for national priorities in relation to chemicals and waste.

(b) Private sector involvement

Private sector entities throughout the value chain and the financial sector should increase their contributions to the implementation of the sound management of chemicals and waste through a range of approaches and partnerships. The private sector should also undertake further work to extend producer responsibility and public private partnerships.

The financial sector is asked to develop guidance for investing in companies that have chemicals management schemes in place, for example, the development of loan criteria for sustainable banking.

(c) Dedicated external finance

External financing complements the components of mainstreaming and industry involvement. Stakeholders should secure funds, including development assistance aid, from innovative donor sources, which can be facilitated by mainstreaming at the national level.

Donors should, where possible, provide dedicated external financing, including, for example, resources to support the Global Environment Facility and other multilateral, regional and bilateral sources, and to support the effective implementation of the Special Programme on institutional strengthening in respect of the chemicals and waste cluster, with a view to supporting institutional

strengthening at the national level for the implementation of the Basel, Rotterdam, Stockholm and Minamata conventions and the Strategic Approach.

All stakeholders, including philanthropists, venture capitalists, NGOs and civil society, should contribute to the instrument's financing in accordance with their means.

Additional Considerations

Some participants have expressed that the integrated approach to long term funding of the sound management of chemicals and waste already provides the way forward on this matter and that focus should be on full implementation of each of the components of this approach; with this in mind the text above is suggested as a starting point for discussion.

We have highlighted some related points below regarding each of the components of the integrated approach:

Part i) Stakeholders have continued to express support for mainstreaming as an important element to address financing. Stakeholders may wish to further discuss how best to achieve mainstreaming.

Part ii) Industry may wish to consider specific milestones in this area.

Part iii) Dedicated external financing referred to under the integrated approach incorporates multilateral, regional and bilateral financial assistance, including:

- UNEP's Special Programme: A dedicated mechanism to support institutional strengthening at the national level for implementation of the sound management of chemicals and waste. Stakeholders may wish to examine the benefits and challenges of this fund to date and how it would respond to the beyond 2020 programme of work.
- The Global Environment Facility: Dedicated resources have expanded through the GEF focal area on chemicals and wastes, which now has a wider scope. At the same time, the GEF as a funding source is focused on global environmental benefits and does not cover all of the multi-sectoral nature of the sound management of chemicals and waste.

2. Specific fund to support implementation

Considerations

Under the Strategic Approach, the Quick Start Programme trust fund was a specific time-limited fund meant to enable start-up activities for national coordination. Positive experiences from the Quick Start Programme have been expressed and some suggested that a similar fund should be considered beyond 2020. In the draft independent evaluation, a number of the successes of the Quick Start Programme have been highlighted, including its flexibility and ease of application, the tangible nature of its results, its high value for money, and the ground-level sustainability of the projects funded from it.

Some stakeholders have suggested that there is a need for a new fund, specifically created to support the programme of work beyond 2020 and that is accessible to all sectors.

3. Establishment of and engagement in multi-sectoral partnerships

Stakeholders are encouraged to create and implement multi-sectoral partnerships linked to the 2030 Agenda to effectively address specific chemicals and waste issues of global concern. Stakeholders are also encouraged to explore funding opportunities by engaging mechanisms in all sectors.

4. Financing the secretariat

Governments and other stakeholders are invited to provide resources to enable the Secretariat to fulfil the assigned functions and tasks set out in subsection G (3) above, including by:

- i. Inviting UNEP to arrange for the adaptation and reinforcement of the existing voluntary trust fund to support those tasks;
- ii. Inviting all countries and regional economic integration organizations to contribute;
- iii. Inviting the private sector, including industry, foundations and other non-governmental organizations, to also contribute.

Additional Considerations

The text above is mirrored on OPS paragraph 19(f).

In terms of lessons learnt in the current SAICM context, the Draft Independent Evaluation highlights that the amount of funds secured for the secretariat has fallen short of the level of funds approved by the ICCM every year. Stakeholders may wish to reflect on this challenge in moving forward. In particular, the role of a Secretariat in facilitating the implementation beyond 2020 is critical to the success of desired outcomes.

Recognizing that the functions of the Secretariat will be dependent on the form and function of the future instrument, careful consideration is needed to ensure the Secretariat has the capacity to fulfil the important tasks that will be set before them.

5. Other considerations

Considerations

Other suggestions and topics have been raised by stakeholders, including opportunities to mobilize resources at the regional and sectoral levels.

Stakeholders may wish to reflect on whether those considerations have been adequately reflected in the text that we have proposed and provide other relevant input as appropriate.

Appendix

Strategic objectives and targets

Targets to support the attainment of each strategic objective are described below.

Strategic objective A: Measures are identified, implemented and enforced in order to prevent and minimize harm from chemicals throughout their life cycle and waste.⁷

Considerations: Intended to address the need for all countries to have basic capacity, legal frameworks and institutional mechanisms to manage chemicals and waste, including illegal trafficking thereof, and for other stakeholders, such as industry, to also assume their responsibilities to prevent harm from chemicals throughout their life cycle.

Target A.1: Countries adopt, implement and enforce legal frameworks that address risk prevention and the reduction of adverse impacts from chemicals throughout their life cycle and waste.⁸

Target A.2: Countries have sufficient capacity to address chemicals and waste issues nationally, including appropriate inter-agency coordination and stakeholder participation mechanisms, such as national action plans.

Target A.3: Countries are implementing the chemicals and waste-related multilateral environmental agreements, as well as health, labour and other relevant conventions, and voluntary mechanisms such as the Globally Harmonized System of Classification and Labelling of Chemicals.

Target A.4: Stakeholders have incorporated the sound management of chemicals throughout their life cycle and waste into their planning, policies and practices, thereby supporting the development and implementation of chemicals management systems and other sector-appropriate mechanisms.

Target A.5: Governments and industry ensure that workers are protected from the risks associated with chemicals and waste and that workers have the means to protect themselves.

Strategic objective B: Comprehensive and sufficient knowledge, data, information and awareness is generated, available and accessible to all to enable informed decisions and actions.

Considerations: Intended to address the need for new information and data to be generated to address gaps and for greater transparency and accessibility, as well as to address the need for training and education to protect all levels of society.

Target B.1: Comprehensive data and information for chemicals on the market are available and accessible, including information and data on properties, health and environmental effects, uses, hazard- and risk-assessment results and risk-management measures, monitoring results and regulatory status throughout their life cycle.

Target B.2: All stakeholders, in particular industries and regulators, have and are using the most appropriate and standardized tools, guidelines and best practices for assessments and sound management, as well as for the prevention of harm, risk reduction, monitoring and enforcement.

Target B.3: Information and standardized methods are available and used to understand the impacts of chemicals and waste for improved burden-of-disease and cost-of-inaction estimates, to inform the advancement of chemical safety measures and to measure progress towards reducing those impacts.

Target B.4: Educational, training and public awareness programmes on chemical safety and sustainability have been developed and implemented, including for vulnerable populations, along with worker safety curricula and programmes at all levels.

Target B.5: Countries and stakeholders are implementing training on environmentally sound and safer alternatives, as well as on substitutions and the use of safer alternatives, such as agroecology.

Strategic objective C: Issues of concern that warrant global action are identified, prioritized and addressed.

⁷ The focus of the present paper is to seek clarity on the proposed objectives and targets before including any examples of milestones.

⁸ Stakeholders may wish to decide whether targets should be time-bound. Dates have not been inserted in the present draft.

Considerations: Intended to cover the need to effectively identify, select and address issues of concern that warrant global action. The intention is to cover topics similar in nature to those covered by the Strategic Approach, emerging policy issues and other issues of concern, as well as topics such as managing specific chemicals, the burden of disease and financing. There may be a need to develop and identify the criteria for issues of concern.

Target C.1: Programmes of work including timelines are established, adopted and implemented for identified issues of concern.

Target C.2: Information on the properties and risk management of chemicals across the supply chain and the chemical contents of products is available to all to enable informed decisions.

Strategic objective D: Benefits are maximized and risks to human health and the environment are prevented through innovative and sustainable solutions and forward thinking.

Considerations: Intended to cover the ongoing need for innovative thinking and solutions to address current and future aspects of managing chemicals and waste, such as life cycle management, the circular economy, green and sustainable chemistry, safer alternatives, better recycling technologies and resource efficiency.

Target D.1: Companies adopt corporate policies and practices that promote resource efficiency and that incorporate the development, production and use of sustainable and safer alternatives, including new technologies and non-chemical alternatives.

Target D.2: Governments implement policies that promote innovation to facilitate the recycling and re-use of products, the adoption of sustainable and safe alternatives, including new technologies and non-chemical alternatives (e.g., the prioritized licensing of reduced-risk alternatives, assessment frameworks, labelling schemes and purchasing policies).

Target D.3: Companies, including from the investment sector, incorporate strategies and policies to support the sound management of chemicals and waste in their investment approaches and business models and apply internationally-recognized reporting standards where relevant.

Target D.4: Companies apply sustainable production principles and life cycle management in the design of chemicals, materials and products, taking reduced-risk, design-for-recycling and non-chemical solutions and processes into account.

Target D.5: Industry associations promote change towards sustainability and the safe management of waste and of chemicals and consumer products throughout their life cycles, including in sharing information and building the capacity of small and medium-sized enterprises to reduce risks.

Strategic objective E: The importance of the sound management of chemicals and waste to achieve sustainable development is recognized by all, actions are accelerated and necessary partnerships are established to foster interaction among stakeholders and to mobilize resources.

Considerations: Intended to address the need for high-level commitment across sectoral boundaries, to ensure appropriate attention is given and actions taken to accelerate progress, and to contribute to the 2030 Agenda for Sustainable Development.

Target E.1: The highest levels of stakeholder organizations, including government, industry, civil society and international organizations in all relevant sectors formally recognize the importance of and commit to action on the sound management of chemicals and waste, and recognize its relevance to sustainable development.

Target E.2: Policies and processes for the management of chemicals and waste are integrated into national and regional development strategies.

Target E.3: Inter- and intra-sectoral partnerships, networks and collaborative mechanisms are established to mobilize resources, to share information, experiences and lessons learned, and to promote coordinated action at the regional and international levels.



SAICM/OEWG.3/INF/3

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**Strategic Approach
to International
Chemicals Management**

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

Global Chemicals Outlook II Summary for Policymakers: From Legacies to Innovative Solutions - Implementing the 2030 Agenda for Sustainable Development

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the summary for policymakers of the Global Chemicals Outlook II, received from the United Nations Environment Programme. The report is presented in the annex as received and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex**Global Chemicals Outlook II Summary for Policymakers: From Legacies to Innovative Solutions - Implementing the 2030 Agenda for Sustainable Development***Summary*

The Executive Director of the United Nations Environment Programme (UNEP) has the honour to present, annexed to the present note, the summary for policymakers of the *Global Chemicals Outlook II: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development*, prepared under the guidance of the Steering Committee of the *Global Chemicals Outlook II* with participation from all regions and a wide range of stakeholders.

The *Global Chemicals Outlook II* has been prepared in response to Governing Council decision 27/12,¹ adopted in 2013, which requested the Executive Director to continue work on the *Global Chemicals Outlook*, and United Nations Environment Assembly resolution 2/7,² adopted in 2016, which requested the Executive Director to submit an update of the first *Global Chemicals Outlook*, addressing inter alia the work carried out particularly in relation to lacking or inadequate data to assess progress towards the 2020 goal, the development of non-chemical alternatives, and the linkages between chemicals and waste, in coordination with the *Global Waste Management Outlook*, and providing scientific input and options for implementation of actions to reach relevant Sustainable Development Goals and targets up to and beyond 2020. Resolution 2/7 included a request to address the issues identified as emerging policy issues by the International Conference on Chemicals Management, as well as other issues where emerging evidence indicates a risk to human health and the environment.

The summary for policymakers, a longer summary and the full *Global Chemicals Outlook II* will also be made available.

¹ UNEP/GC.27/12.

² UNEP/EA.2/Res.7.

Global Chemicals Outlook II: Key Findings

The global goal to minimize adverse impacts of chemicals and waste will not be achieved by 2020. Solutions exist, but more ambitious worldwide action by all stakeholders is urgently required.



1. The size of the global chemical industry exceeded United States dollars 5 trillion in 2017. It is projected to double by 2030. Consumption and production are rapidly increasing in emerging economies. Global supply chains, and the trade of chemicals and products, are becoming increasingly complex.



2. Driven by global megatrends, growth in chemical-intensive industry sectors (e.g. construction, agriculture, electronics) creates risks, but also opportunities to advance sustainable consumption, production and product innovation.



3. Hazardous chemicals and other pollutants (e.g. plastic waste and pharmaceutical pollutants) continue to be released in large quantities. They are ubiquitous in humans and the environment and are accumulating in material stocks and products, highlighting the need to avoid future legacies through sustainable materials management and circular business models.



4. The benefits of action to minimize adverse impacts have been estimated in the high tens of billions of United States dollars annually. The World Health Organization estimated the burden of disease from selected chemicals at 1.6 million lives in 2016 (this is likely to be an underestimate). Chemical pollution also threatens a range of ecosystem services.



5. International treaties and voluntary instruments have reduced the risks of some chemicals and wastes, but progress has been uneven and implementation gaps remain. As of 2018, more than 120 countries had not implemented the Globally Harmonized System of Classification and Labelling of Chemicals.



6. Addressing legislation and capacity gaps in developing countries and emerging economies remains a priority. However, resources have not matched needs. There are opportunities for new and innovative financing (e.g. through cost recovery and engagement of the financial sector).



7. Significant resources can be saved by sharing knowledge on chemical management instruments more widely, and by enhancing mutual acceptance of approaches in areas ranging from chemical hazard assessment to alternatives assessment.



8. Frontrunner companies – from chemical producers to retailers – are introducing sustainable supply chain management, full material disclosure, risk reduction beyond compliance, and human rights-based policies. However, widespread implementation of these initiatives has not yet been achieved.



9. Consumer demand as well as green and sustainable chemistry education and innovation (e.g. through start-ups) are among the important drivers of change. They can be scaled up through enabling policies, reaping the potential benefits of chemistry innovations for sustainable development.



10. Global knowledge gaps can be filled. This can be achieved, for example, by taking steps to harmonize research protocols, considering health or environmental impact information and harm caused to set priorities, and strengthening the science-policy interface through enhanced collaboration of scientists and decision-makers.

Introduction

1. The Global Chemicals Outlook II (GCO-II) is released at a crucial moment. Since publication of the GCO-I in 2013, the global consumption and production of chemicals¹ has continued to grow, with a number of trends that are a cause for concern. This period has also witnessed the adoption in 2015 of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs), which include several specific targets related to chemicals and waste (see Table 1). Shortly thereafter, the International Conference on Chemicals Management (ICCM) initiated an intersessional process to prepare by 2020 recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020.
2. In 2002, the World Summit on Sustainable Development had adopted the Johannesburg Plan of Implementation, in which Governments agreed to “achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment [...]”. The 2006 Strategic Approach to International Chemicals Management (SAICM) Overarching Policy Strategy built upon this timeline. It referred to the “2020 goal”, a term subsequently used by the ICCM. The 2020 timeline was reiterated at the 2012 Rio plus 20 Summit (referring to chemicals and hazardous waste) and in SDG Target 12.4 (referring to chemicals and all wastes).

Table 1: Chemicals and waste in the 2030 Agenda: SDG Targets 3.9 and 12.4

SDG 3: Ensure healthy lives and promote well-being for all at all ages	
	Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
SDG 12: Ensure sustainable consumption and production patterns	
	Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

Key messages for policymakers: a call for more ambitious action at all levels

The 2020 goal will not be achieved: business as usual is not an option

3. Despite global agreement reached at several high-level United Nations (UN) Conferences and significant action already taken, findings of the GCO-II indicate that the sound management of chemicals and waste will not be achieved by 2020. Trends data suggest that the doubling of the global chemicals market between 2017 and 2030 will increase global chemical releases, exposures, concentrations and adverse health and environmental impacts unless the sound management of chemicals and waste is achieved worldwide. Business as usual is therefore not an option. Accelerating progress in order to achieve sound management, and the minimization of adverse impacts, within the context of the 2030 Agenda is, however, possible under a sustainability scenario. This will require more ambitious, urgent and worldwide collaborative action by all stakeholders and in all countries. [Part I, Ch. 1-8; Part II, Ch. 3-5, Part IV, Part V]

A comprehensive global framework is needed, with ambitious priorities and coherent indicators

4. To address gaps, a global framework for the sound management of chemicals and waste beyond 2020 needs to be developed that is aspirational and comprehensive, and creates incentives to foster commitment and engagement by all relevant actors in the value chain. Drawing upon lessons learned from the Strategic Plan for Biodiversity 2011-2020, a global common vision, strategic goals, targets and

¹ The term “chemicals” is understood throughout this document to include pharmaceuticals, unless otherwise noted.

indicators could facilitate linkages across all relevant agreements and initiatives, and make reporting schemes simpler, country-driven and linked to global targets. Under such a scheme, indicators would need to distinguish between outputs (e.g. adoption of legislation) and impacts (e.g. reduction of adverse impacts from hazardous chemicals). [Part II, Ch. 2; Part V, Ch. 2-3]

Implementation of actions up to and beyond 2020

5. Responding to the UN Environment Assembly (UNEA) mandate and based on a review of the implementation of the 2020 goal to date, the GCO-II presents a range of options for implementation of actions (hereinafter referred to as “actions”) to reach relevant SDGs and targets up to and beyond 2020. The identified actions are considered of particular relevance for developing and implementing an approach for chemicals and waste management beyond 2020. Equally important, they target policy- and decision-makers around the world and from all stakeholder groups to generate enhanced commitment for implementation. They also cover commitments already agreed internationally which require urgent attention and renewed commitment due to implementation gaps identified in the GCO-II. Examples include implementation of the GHS and the strengthening of basic chemicals and waste management systems. The actions are presented under ten topics which were derived using a back-casting approach, imaging a sustainability scenario, where legacy problems are addressed and future legacies are avoided, including through green and sustainable chemistry innovation and sustainable consumption and production.



Develop effective management systems: Address prevailing capacity gaps across countries, strengthen national and regional legislation using a life cycle approach, and further strengthen institutions and programmes.



Mobilize resources: Scale up adequate² resources and innovative financing for effective legislation, implementation and enforcement, particularly in developing countries and economies in transition.



Assess and communicate hazards: Fill global data and knowledge gaps, and enhance international collaboration to advance chemical hazard assessments, classifications and communication.



Assess and manage risks: Refine and share chemical risk assessment and risk management approaches globally, in order to promote safe and sustainable use of chemicals throughout their life cycle.



Use life cycle approaches: Advance widespread implementation of sustainable supply chain management, full material disclosure, transparency and sustainable product design.



Strengthen corporate governance: Enable and strengthen the chemicals and waste management aspects of corporate sustainability policies, sustainable business models, and reporting.



Educate and innovate: Integrate green and sustainable chemistry in education, research, and innovation policies and programmes.



Foster transparency: Empower workers, consumers and citizens to protect themselves and the environment.



Bring knowledge to decision-makers: Strengthen the science-policy interface and the use of science in monitoring progress, priority-setting, and policy-making throughout the life cycle of chemicals and waste.

² To facilitate better understanding of the term “adequate” in this context, further analysis and international dialogue are needed on certain topics such as sustainability of funding.

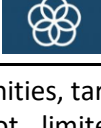


Enhance global commitment: Establish an ambitious and comprehensive global framework for chemicals and waste beyond 2020, scale up collaborative action, and track progress.

Using the Sustainable Development Goals and targets to stimulate integrated action beyond 2020

6. In addition to action to meet the SDG targets that directly address chemicals and waste management (SDG 3.9 and 12.4), the 2030 Agenda provides a renewed opportunity to strengthen inter-ministerial coordination mechanisms, and to integrate chemicals and waste considerations into relevant sector policies and actions (see Table 2 for examples). While progress has been made in advancing chemicals and waste considerations in some sectors (e.g. in agriculture, through the International Code of Conduct on Pesticide Management, and in health, through the World Health Organisation (WHO) Chemicals Road Map), other sectors (e.g. housing) have so far received limited international attention. [Part V, Ch. 1-3]

Table 2: Integrating chemicals and waste management, and green and sustainable chemistry innovation, in relevant sectors: some opportunities

Sectors	SDG targets		Examples of opportunities for management and innovation
Agriculture and food		Target 2.4: sustainable food production	Scale up integrated pest management and agro-ecological approaches, including development and use of non-chemical alternatives and other good agricultural practices
Health		Target 3.8: safe medicines and vaccines	Sound management of pharmaceuticals and disinfectants that contribute to antimicrobial resistance
Energy		Target 7.a: clean energy research and technologies	Improve technologies using resource-efficient, sustainable materials when decarbonizing the energy sector
Housing		Target 11.1: safe housing	Reduce indoor air pollution through safer insulation and replace building materials of concern (e.g. asbestos)
Education		Target 4.7: education for sustainable development	Mainstream green and sustainable chemistry into relevant curricula
Finance		Target 17.3: financial resources from multiple sources	Enhance use of green and sustainable chemistry metrics as criteria in investment
The opportunities, targets and sectors in this table are not exhaustive. Other relevant sectors include (but are not limited to) industrial production, technology and innovation, infrastructure development, transport, mining, tourism, labour, trade, development cooperation, and justice.			

Enhancing commitment by current stakeholders and increasing engagement by new actors

7. The period up to the conclusion of the intersessional process, by 2020, provides a brief but critical window in which to develop an ambitious and comprehensive global framework – as well as to increase engagement by all stakeholders. To facilitate commitment, ownership, mutual accountability and collective tracking of progress to achieve the sound management of chemicals and waste, countries and all relevant stakeholders could develop, implement and share, internationally, results-based action plans and roadmaps. Stakeholders could pledge and showcase their action plans and

roadmaps within the beyond 2020 framework and benefit from the input of other stakeholders (which might take different forms, such as peer review). Pledges could be reviewed globally against agreed goals and targets, with adjustments made as appropriate. [Part V, Ch. 1-3]

While many chemicals are important for sustainable development, trends are a cause for major concerns, requiring urgent action

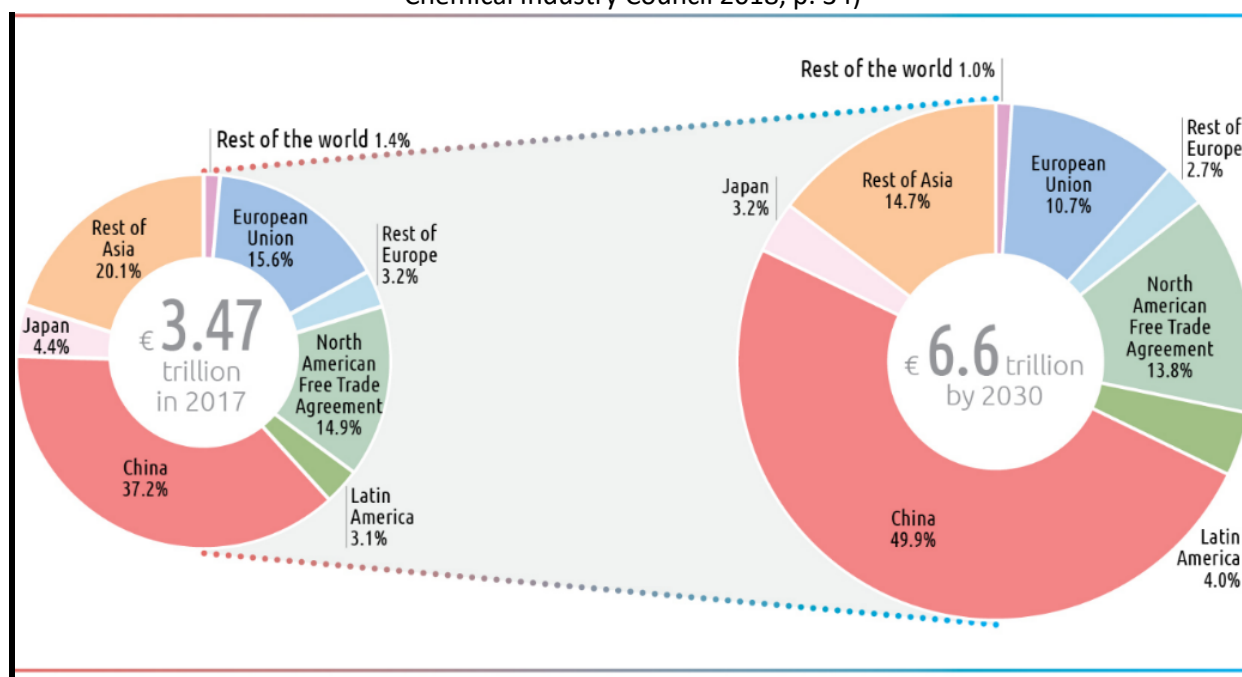
Sound management and innovations in chemistry are essential for sustainable development

8. From pharmaceuticals and plant protection products to the production of cars, computers and textiles, many manufactured chemicals have helped improve human health, food security, productivity and quality of life throughout the world. However, many chemicals and wastes have hazardous properties and continue to cause significant adverse impacts on human health and the environment because they are not properly managed. Innovations in chemistry and materials science have the potential to create safer chemicals, increase resource efficiency, and reduce the health and environmental impacts associated with the current global production and consumption system. [Part I, Ch. 1, 7; Part IV, Ch. 1]

The production, use and trade of chemicals are growing in all regions, driven by global megatrends

9. In 2018 the total number of industrial chemicals in commerce globally was estimated at 40,000 to 60,000, with 6000 of these chemicals accounting for more than 99 per cent of the total volume. According to 2018 data compiled by European Environment Agency, approximately 62 per cent of the total volume of chemicals consumed in Europe in 2016 were hazardous to health. Between 2000 and 2017, the global chemical industry's production capacity (excluding pharmaceuticals) almost doubled, from about 1.2 to 2.3 billion tonnes. If pharmaceuticals were included, global sales totalled United States dollars (USD) 5.68 trillion in 2017, making the chemical industry the second largest manufacturing industry in the world. Sales are projected to almost double again from 2017 to 2030 (see Figure 1). Projected growth will be highest in Asia, with China estimated to account for almost 50 per cent of global sales by 2030. High growth rates are also expected in Africa and the Middle East. [Part I, Ch. 1]

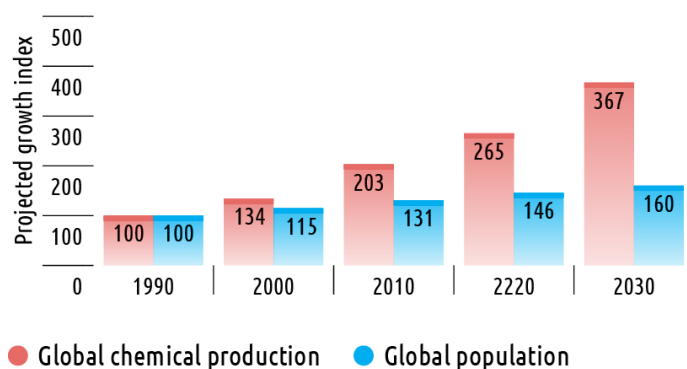
Figure 1: Projected growth in world chemical sales (excluding pharmaceuticals), 2017-2030 (European Chemical Industry Council 2018, p. 34)



10. Megatrends, such as global economic growth and global population dynamics, affect market demand for chemicals, creating both risks and opportunities. Growth in chemical-intensive industry sectors and

markets, such as construction, agriculture, electronics, cosmetics, mining and textiles, continues to drive growth in the markets for chemicals used in these sectors. Under a business as usual scenario, the rate of growth of chemical production is projected to exceed that of population growth at least until 2030 (see Figure 2). This means per capita consumption of chemicals is increasing steadily – highlighting the need to achieve sustainable consumption and production, as called for by SDG 12 of the 2030 Agenda. It also reinforces the need to decouple material use from economic growth, enhance resource- and eco-efficiency, advance sustainable materials management, and prioritize source reduction, reuse and recycling, as called for by the waste hierarchy. [Part I, Ch. 1, 3]

Figure 2: Growth of basic chemical production capacity vs. population growth (based on Cayuela and Hagan 2019 and UN Department of Economic and Social Affairs 2018)

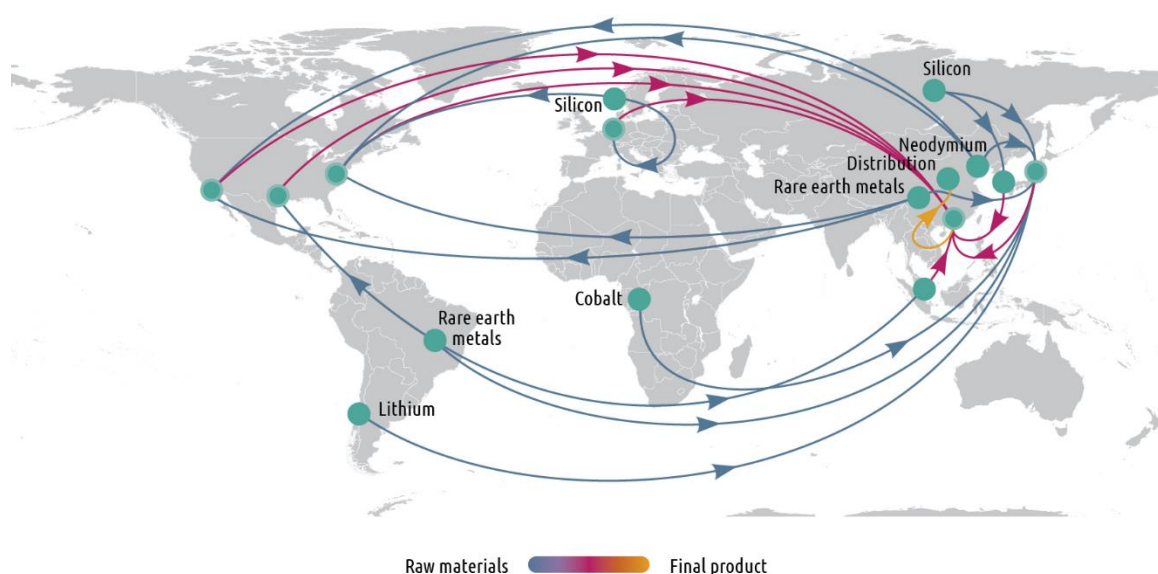


The growth rates of chemical production capacity are derived from past and projected growth rates for basic petrochemical building blocks (ethylene, propylene, butadiene, benzene, toluene, and xylenes).

Chemical-intensive products and complex global supply chains create challenges for circularity

11. Modern-day products often contain hundreds of chemicals. Many of these chemicals may have hazardous properties. In addition, unintentional contaminants have been widely detected in a range of products, including toys. Specific challenges are created by the complexity of global supply chains (see Figure 3), the cross-border trade of chemicals and chemical-intensive products, and recycling. Recent research shows that the import of many products does not comply with the chemicals legislation of the importing country. Cross-border e-commerce, growing at 25 per cent annually, adds further complexity. Only 9 per cent of global material resources are recycled and many durable products and buildings, as well as infrastructure and machinery, that contain hazardous chemicals remain in human-made material stocks (estimated to weigh 30 trillion metric tons in 2016) for years to come, creating potential future legacies. Mirroring this trend, less than 9 per cent of the 6.3 billion metric tons of plastic waste generated up to 2015 has been recycled, while 12 per cent was incinerated and 79 per cent was disposed in landfills or in the environment. Full material disclosure of products, sound recycling and waste management, and sustainable product design are important actions to minimize potential future releases from material stocks and products, and to generate secondary raw materials in a circular economy that are safe and sustainable. [Part I, Ch. 4-5]

Figure 3: Illustration of the complexity of global supply chains: the case of an electronic product (Sourcemap 2012)



Large amounts of chemical pollutants are released from production, products and wastes, illustrating the inefficient use of resources

12. Production processes continue to generate significant chemical releases to air, water and soil as well as large amounts of waste, including hazardous waste. In the production of pharmaceuticals, for example, at least 25 kilograms (kg) of emissions and waste (and at times more than 100 kg) are generated for every kg of product, highlighting resource inefficiencies. Significant amounts of greenhouse gases are also emitted during the production of chemicals. In addition, chemical accidents in industrial facilities continue to release significant amounts of hazardous substances. Moreover, hazardous chemicals are released from chemical-intensive products: for example, microplastics are released to water and phthalates and brominated flame retardants to indoor air. A recent study suggests that releases of chemicals from consumer products (e.g. cosmetics and paints) have become the primary source of volatile organic pollutants from petrochemical sources in some industrialized cities. Developing countries and economies in transition face particular challenges, such as releases of heavy metals from battery recycling and of mercury from artisanal and small-scale gold mining, polluting air, water and soil [Part I, Ch. 4-5]

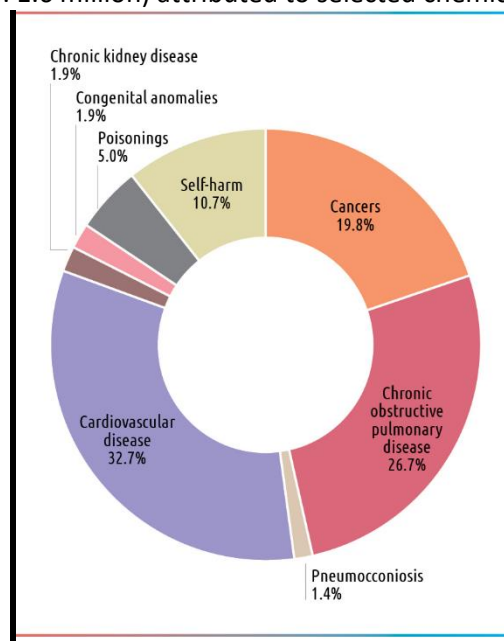
Chemical pollutants are ubiquitous in the environment and in humans

13. Chemical pollutants continue to be detected in air, water and soil and in biota in all regions. Soils throughout the world are contaminated by hazardous chemicals, including polychlorinated biphenyls (PCBs), heavy metals and certain pesticides. Many of these hazardous chemicals, as well as microplastics, are found in food for human consumption. Microplastics, pharmaceutical residues, mercury and many other substances of concern have been detected in water bodies and marine animals, which are often consumed by humans. Concentrations of chemical pollutants are found in some of the most remote and unexpected parts of the planet. For example, PCBs have been detected at high concentrations in animals 10,000 metres deep in ocean sediment, and certain organochlorine pesticides regulated under the Stockholm Convention have been found in the Himalayan glaciers. Chemicals of concern are also routinely detected in humans. Examples are dioxins and furans in breast milk, phthalates in urine, and heavy metals in human blood. Recent studies have detected previously banned flame retardants in the umbilical cord blood of newborn children, indicating one pathway, among others, for the transfer of legacy substances to new generations, which is a typical feature of persistent and bio-accumulative substances. [Part I, Ch. 6]

The burden of disease from chemicals is high, and vulnerable populations are particularly at risk

14. The 2017 report of the *Lancet* Commission on Pollution and Health identified chemical pollution as a significant and “almost certainly underestimated” contributor to the global burden of disease. In 2018, the WHO estimated the disease burden preventable through sound management and reduction of chemicals in the environment at around 1.6 million lives and around 45 million disability-adjusted life years (DALYs) in 2016 (see Figure 4). These are likely to be underestimates, given that they are based only on exposures to chemicals for which reliable global data exist (including lead causing intellectual disability, occupational carcinogens such as asbestos, and pesticides involved in self-inflicted injuries). The 2016 Global Burden of Disease study estimated that 500,000 deaths are attributable solely to lead exposure. In addition, chemical accidents in facilities continue to result in high human fatalities, adverse environmental impacts and large economic costs. [Part I, Ch. 7]

Figure 4: Deaths (total: 1.6 million) attributed to selected chemicals (WHO 2018, page 2)



15. Workers are typically subject to disproportionately high exposures to hazardous chemicals, particularly in small and medium-sized enterprises (SMEs) in low- and middle-income countries and in the informal economy, where they may not be sufficiently informed and protected. In 2015, almost 1 million workers died from exposure to hazardous substances, including dusts, vapours and fumes, based on estimates released by the International Labour Organisation. Foetuses, infants, children, pregnant women, the elderly and the poor are particularly susceptible to the effects of chemical exposures. The poor may be disproportionately exposed because they frequently live near relevant sources of releases, such as hazardous waste dumpsites and production facilities. Exposures of women and men to chemicals may also differ. For example, women are more likely to be exposed to hazardous chemicals contained in certain cosmetics, while men have significantly higher occupational exposures in certain sectors. [Part I, Ch. 7]

Chemical pollution threatens biota and ecosystem functions

16. A range of adverse impacts of chemical pollutants on biota continue to be observed. Examples include lethal and chronic effects on fish from brominated flame retardants; suppression of immune systems in seals and turtles due to exposure to PCBs and per- and polyfluoroalkyl substances; and feminization of male fish due to exposure to synthetic oestrogen. A 2018 study from India indicates that the drug diclofenac continues to adversely affect the health of the vulture population more than a decade after it was banned. Moreover, some pesticides have been found to negatively impact non-target insects and pollinators; excess use of phosphorous and nitrogen in agriculture continues to contribute to ocean dead zones around the world; and some chemicals put pressure on the health of coral reef

ecosystems. Studies also indicate that environmental releases of some antimicrobials, heavy metals and disinfectants contribute to antimicrobial resistance. [Part I, Ch. 7]

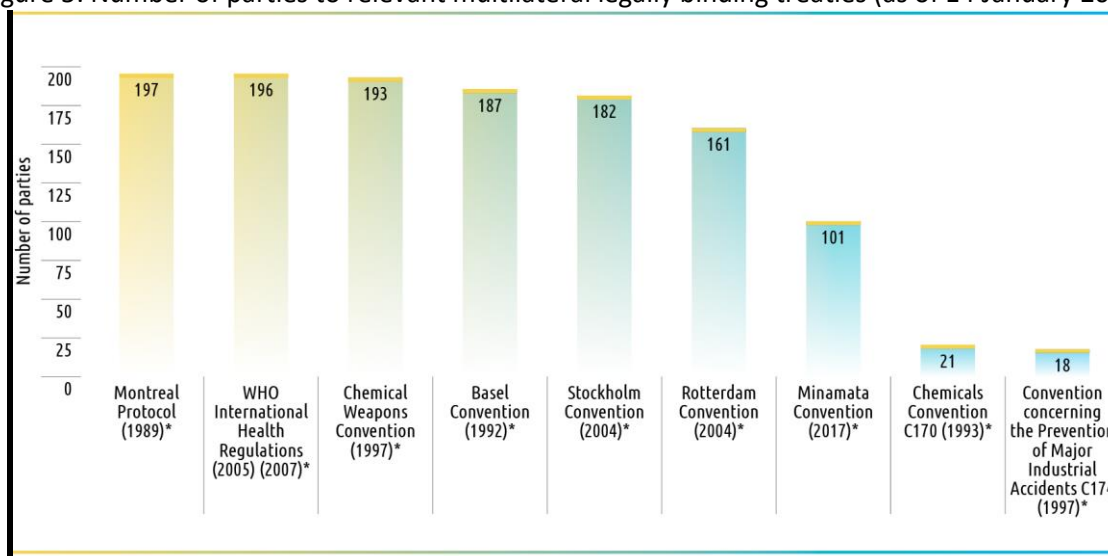
The costs of inaction and the benefits of action are estimated to be significant, but methods need to be refined

17. The costs associated with unsound management of chemicals and waste include productivity losses, health care costs, damage to ecosystems, litigation costs, and reputational damage to businesses. A 2015 study estimated the costs from neurobehavioral deficits caused by certain chemicals to be more than USD 170 billion per year in the European Union alone. Another study estimated the economic costs attributable to childhood lead in low and middle income countries at a total cost of international dollar 977 billion. Some studies estimate costs from environmental chemical exposures to be as high as several percentage points of global gross domestic product, with developing countries and economies in transition bearing the largest costs. Conversely, a 2017 study conservatively estimated the cumulative benefits of chemicals legislation in the European Union “in the high tens of billion Euro per year”. However, since data are still limited, robust socio-economic analysis is challenging and estimation methodologies need further refinement. A global study comparable to the Stern Review on the Economics of Climate Change does not exist. [Part I, Ch. 8]

Multilateral treaties address some chemicals and issues of global concern, but implementation challenges remain

18. The international community has taken concerted action through legally binding treaties on some of the most harmful chemicals and on some issues of global concern. Prominent examples include the multilateral treaties shown in Figure 5. These treaties have catalysed selected regulatory actions, raised awareness, and succeeded in reducing some exposures to the targeted chemicals and wastes. However, not all treaties have been universally ratified. Given that treaties are designed to address specific chemicals and issues, many hazardous substances are beyond their scope. While implementation of the Montreal Protocol is a notable success story, the extent to which the objectives of a number of other treaties have been achieved is uncertain. In the case of the Stockholm Convention, the 2016 effectiveness evaluation concluded that “the Convention provides an effective and dynamic framework to regulate persistent organic pollutants throughout their life cycle”. However, it identified areas for further work, such as gaps in regulatory and assessment schemes for industrial chemicals and the large remaining stockpiles of obsolete pesticides and PCBs. Significant progress has also been in the case of other treaties. Nevertheless, further efforts are needed to achieve full implementation, as in the case of the chemicals dimension of the International Health Regulations (2015). [Part II, Ch. 1, 3]

Figure 5: Number of parties to relevant multilateral legally binding treaties (as of 14 January 2019)



* year of entry into force

Voluntary international instruments cover a broader range of issues, but lack effective implementation

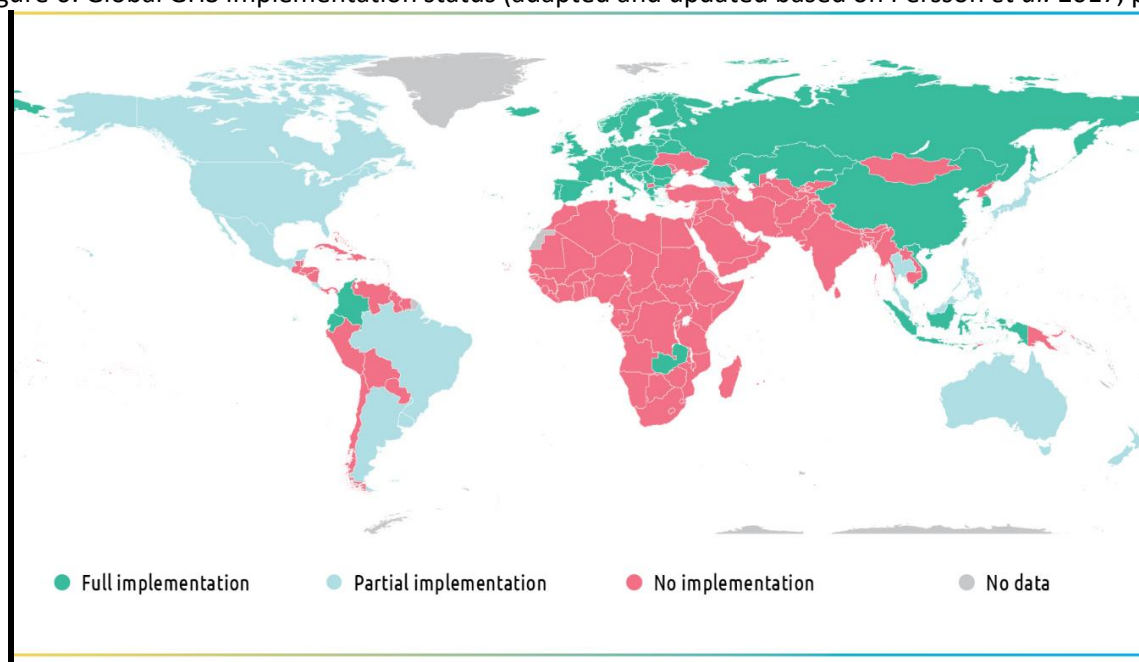
19. Several voluntary international instruments adopted by the governing bodies of international organizations address a wide range of chemicals and issues. Prominent examples include the new International Code of Conduct on Pesticide Management, approved in 2013, and the GHS, adopted in 2002. SAICM, adopted by the ICCM in 2006, supports a comprehensive life cycle approach for all hazardous chemicals. A 2018 independent evaluation of SAICM found that it is unique in its ambition as an inclusive multi-stakeholder, multi-sector voluntary policy framework. The evaluation also found that SAICM creates a collaborative space for raising awareness, increasing knowledge and reducing risks. However, it pointed out weaknesses, such as insufficient sectoral engagement; the capacity constraints of national focal points; lack of tools to measure progress; limited financing of activities; and insufficient and uneven advances in substantive areas such as illegal international traffic. The evaluation noted that the identification of, and actions taken on, the eight emerging policy issues (EPIs) and other issues of concern were a major strength. Nevertheless, it found that slow, modest and uneven progress has been made in implementing the EPIs. In light of the UNEA mandate to address EPIs, the GCO-II presents measures to further address existing EPIs. [Part II, Ch. 1, 3-4]

Some countries have taken recent regulatory action based on emerging evidence of risk

20. The UNEA also requested that the GCO-II addresses other issues where emerging evidence indicates a risk to human health and the environment. Using as a starting point recent regulatory risk management actions taken by public bodies since 2010 on chemicals or groups of chemicals not addressed at the international level, and to facilitate knowledge-sharing, the GCO-II identified the following eleven chemicals or groups of chemicals and issues associated with them: arsenic, bisphenol A, glyphosate, cadmium, lead, microbeads, neonicotinoids, organotins, polycyclic aromatic hydrocarbons, phthalates and triclosan. [Part II, Ch. 5]

Overall progress towards achieving the sound management of chemicals and waste is uneven across countries, regions and actors

21. While significant progress has been made towards achieving the sound management of chemicals and waste, major implementation gaps remain. In each region there is a set of distinct trends, challenges and opportunities. In particular, developing countries and economies in transition, including some with chemical production facilities, still lack basic chemicals and waste management systems, including legal and institutional capacities, Pollutant Release and Transfer Registers, poison centres, and capacities for hazard and risk assessment and risk management. The GHS is not operational in more than 120 countries, mostly developing countries and economies in transition (see Figure 6)_bookmark6. As of September 2018, only 37 per cent of countries had confirmed that they have legally binding controls on lead in paint. Concerning illegal international traffic, chemicals and waste (e.g. electronic waste) are frequently falsely declared while counterfeit products (e.g. pesticides and cosmetics) are traded across borders. While industry is involved through programmes such as Responsible Care®, universal coverage is yet to be achieved. Opportunities exist to review these programmes' effectiveness through the involvement of relevant stakeholders, as well as to scale up industry responsibility and leadership, drawing upon lessons learned, for example, from the Zero Discharge of Hazardous Chemicals initiative in the textile sector. [Part II, Ch. 3; Part III, Ch. 1-6]

Figure 6: Global GHS implementation status (adapted and updated based on Persson *et al.* 2017, p. 8)

A global coherent results, indicator and reporting framework is lacking

22. The current international framework for reporting and measuring progress in the area of chemicals and waste is spread across various treaties, voluntary chemicals and waste instruments, and the 2030 Agenda. A range of different – and not always complementary – indicators have been developed under various international agreements. Reporting rates under several agreements are low, particularly among developing countries and economies in transition. In some cases, reporting rates exhibit a downward trend. The combination of a fragmented indicators framework and low reporting makes it challenging to develop a global baseline, and to track progress in a systematic way. Moreover, the use of activity- or instrument-based indicators alone provides limited insights in assessing impacts achieved. Opportunities therefore exist to put in place a simple and coherent global indicators framework that distinguishes between outputs and impacts, creates linkages across international agreements (including the 2030 Agenda) and is supported by a simple, country-driven reporting scheme. [Part II, Ch. 2]

Solutions exist, but more ambitious, urgent and worldwide action is needed by all stakeholders

Regulatory systems based on a life cycle approach in all countries are critical

23. Establishing legal frameworks that address the life cycle of chemicals and waste is critical and a priority. Many countries, including several developing countries and economies in transition, have already made important headway in enacting laws, creating programmes, and implementing policies to achieve the sound management of chemicals and waste. Their success stories create the potential for cooperation, knowledge-sharing and replication. Valuable work has also been undertaken by countries through the development of national chemicals management profiles and plans, often prepared through multi-sectoral and multi-stakeholder collaboration. These initiatives provide a useful starting point for country-level action beyond 2020, taking into account SAICM's overall orientation and guidance. [Part II, Ch. 3]

Effective implementation requires adequate financing, technology transfer and technical assistance

24. The integrated approach to financing, welcomed by the Governing Council of the United Nations Environment Programme in 2013, includes the three components of mainstreaming, industry involvement, and dedicated external financing. Some countries have already integrated chemicals and waste management in their development planning and budgeting; have clarified responsibilities

between the public and private sector; have promoted extended producer responsibility and the internalization of costs by industry; and have used fiscal instruments, such as taxing hazardous chemicals. External funding (e.g. through the Global Environment Facility, or the Special Programme to support institutional strengthening) has been significant, but has not matched the need and demand for support, expressed by developing countries and economies in transition for building basic chemicals and waste management systems. Industry involvement has been equally important in mobilizing resources and built capacity, but gaps remain in increasing contributions to match responsibility and the required level of support. Further action is required to achieve full implementation of the integrated approach with respect to all three components. Action is also required in order to explore new opportunities such as sovereign wealth funds, philanthropic finance, and strengthened engagement of the financial sector and investors so as to mobilize and help guide their largely untapped resources to contribute to sustainable development. [Part II, Ch. 3; Part IV, Ch. 6]

Global knowledge-sharing and further harmonization of chemical management approaches can save significant resources

25. For many years, Governments, intergovernmental organizations, industry and other stakeholders have been developing and employing a range of approaches to identify chemical hazards, assess exposure and risks, implement risk management actions and assess alternatives, with a view to advancing informed substitution and avoiding regrettable substitutions, including through non-chemical alternatives. Valuable lessons have been learned in the practical application of these approaches. Opportunities have also emerged to enhance their effectiveness and streamline their use, especially by using computer-based estimation methods to replace, where possible, animal testing. Opportunities include the use of generic approaches for risk assessment; shifting the burden of proof from Government to industry; and stimulating assessment approaches which take into account broader sustainability considerations. Proactive and pre-emptive risk management – together with appropriate training – are particularly important in occupational settings, including in SMEs and in the informal sector. Experience shows that resources can be saved through international collaboration, such as sharing and mutually accepting chemical hazard data, assessments and classifications. Advances in this respect would be particularly helpful in developing countries and economies in transition. [Part III, Ch. 1-7]

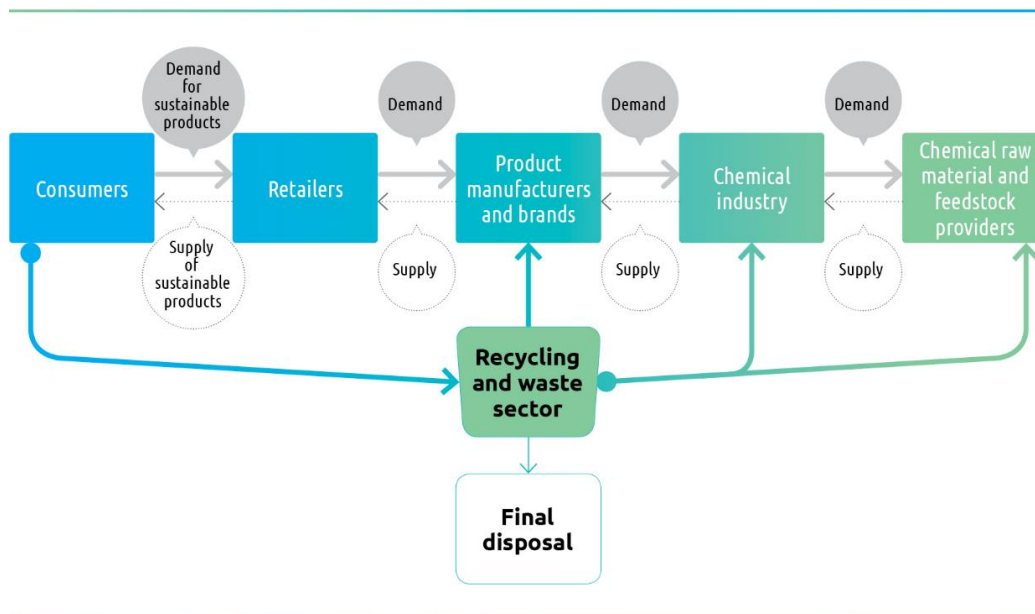
26. Countries may also save significant resources by aligning their approaches with those of other countries of regional bodies (including regional economic integration organizations), or with internationally agreed guidance – while maintaining a high standard of protection. Examples of such guidance include that developed by the Organisation for Economic Co-operation and Development and by the WHO. Altogether, these opportunities point to the value of further global knowledge-sharing and capacity building, building on work already undertaken by intergovernmental organizations and other stakeholders. [Part II, Ch. 3]

Opportunities exists to scale up effective corporate governance and sustainable supply chain management

27. A growing number of retailers, product manufacturers and chemical companies have included sustainability objectives, sustainable supply chain management (see Figure 7), and extended producer responsibility in their corporate policies. Industry action to advance the transparent flow of information on chemicals and materials throughout the supply chain is also gaining momentum. Yet universal implementation of these initiatives has not been achieved. Relevant measures to be taken include: scaling up voluntary standard-setting beyond compliance; harmonizing chemical management protocols across industry sectors (e.g. on full material disclosure and labelling of products); using life cycle assessment tools, metrics and reporting to address the sustainability of products throughout their life cycle; and scaling up the design of safer and more sustainable products and production processes. Promoting the engagement of (and developing capacity in) the recycling sector is important, so that secondary raw materials going back into the circular economy are safe and

sustainable. It is equally relevant to recognize the role of informal actors at various stages in the supply chain. Unless the measures described above (and others) are put in place, companies may face significant economic risks. For example, multinational companies recently experienced heavy losses in stock values in the range of USD billions, or had to pay significant compensation, due to allegations of lack of diligence or unsound management practices. [Part IV, Ch. 4-5, 7]

Figure 7: Interface of demand and supply in driving the sustainability of chemicals in the supply chain



Enhanced transparency is needed to empower workers and citizens and protect the environment

28. Providing enhanced access to robust information to workers, consumers and communities as well as to foster understanding thereof is a prerequisite to achieve the sound management of chemicals and waste. Workers can only protect themselves if they have access to chemical hazard and safety information. Providing citizens and consumers with robust information on hazardous chemicals in products allows them not only to protect themselves, but also to shape market demand for safer and more sustainable products. The smartphone app ToxFox, for example, provides information about endocrine disrupting chemicals in cosmetics. It also allows users to submit inquiries about hazardous chemicals. In addition, new and innovative citizen science tools are available that allow citizens and workers to collect and share knowledge e.g. on high levels of occupational exposure. More efforts are needed to promote access to (and understanding of) this information, particularly in developing countries and economies in transition. [Part IV, Ch. 8]

Strengthening the interface of chemicals and waste management and human rights

29. In 2012, the UN Human Rights Council (HRC) affirmed “that the way hazardous substances and wastes are managed throughout their lifecycle, including manufacturing, distribution, use and final disposal, may have an adverse impact on the full enjoyment of human rights”. In an August 2018 report to the HRC, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes recommended that “states must ensure that legislation and other practices reflect their duty to respect, protect and fulfil human rights obligations implicated by hazardous substances and wastes [...] [and] that victims of the effects of hazardous substances and wastes have access to an effective remedy”, further noting that “the right to information is critical in the context of toxics”. Furthermore, the Special Rapporteur proposed 15 principles to help Governments and businesses better protect human rights with respect to exposure to hazardous chemicals. These measures are relevant to strengthening chemicals and waste management beyond 2020. Some companies, including from the chemical industry, have already

committed to respect human rights, along the lines of the UN's Guiding Principles on Business and Human Rights. Other companies may consider following suit. [Part IV, Ch. 8]

Green and sustainable chemistry education, innovation and sustainable business models can benefit from enabling support

30. A number of groundbreaking innovations in chemistry and materials science – for example fast-charging solid-state batteries, or the use of water to replace toxic solvents in production – have been achieved or are on the horizon, illustrating the potential of chemistry to solve societal challenges. The concepts of green and sustainable chemistry seek – and have the potential – to help advance innovation towards more efficient and safer chemicals, production processes and products throughout the life cycle. Sustainable chemistry criteria, if further developed internationally, may provide valuable guidance for verifying whether innovations in chemistry are fully compatible with sustainable development. Scaling up green and sustainable chemistry education, research and innovation requires enabling policies, programmes and financing. This includes curricula reform to integrate toxicology, green chemistry and sustainable chemistry at all levels in order to foster a new generation of chemists. Green and sustainable chemistry research and innovation can be incentivized through public funding, awarding of subsidies, and blended financing (including through start-up companies). Similarly, policy and fiscal incentives can help nurture and scale up sustainable business models, such as chemical leasing. [Part IV, Ch. 1-4]

Filling knowledge gaps through strengthening the science-policy interface

31. Although a wealth of data and knowledge has been generated, many data gaps and unknowns remain. They include, for example, chemical hazard data for many chemicals in commerce; environmental, health and safety data; outdoor and indoor chemical releases; exposures and concentrations in humans and the environment; and the adverse impacts of chemicals (e.g. on health). Disparities remain in data collection and availability across time and countries, making the identification of baselines, trends, and emerging issues and priorities challenging. Industry has a critical role and responsibility in generating and disseminating relevant data. Opportunities exist to provide better and more coherent scientific information for policy-making. This can be achieved, for example, by taking steps towards cost effective harmonization of data generation and collection, and respective research protocols (e.g. on releases and biomonitoring), strengthening monitoring and surveillance capacities (including those of medical professionals), and sharing data more systematically at all levels [Part I, Ch. 1, 5-9; Part II, Ch. 1, 3; Part III, Ch. 2-3]

32. Further approaches and mechanisms could be developed to strengthen two-way communication, support and collaboration between the scientific community and policymakers, and to develop a problem-solving oriented research agenda and protocols on priority topics. Stakeholders could find value in further exploring methodologies that facilitate more systematic identification of future priorities at the international level, for example by using information on health and environmental impacts and harm caused, and by drawing on information from risk assessments. Improved science-policy interaction can also help in identifying issues early on, priorities, as well as the corresponding specific and measurable targets that guide their implementation. [Part I, Ch. 9; Part II, Ch. 3-4; Part III, Ch. 2-3]

Annex: Actions up to and beyond 2020 identified through GCO-II

As a contribution to strengthening implementation of the sound management of chemicals and waste and minimizing their adverse impacts, the GCO-II identified the following actions, grouped under 10 topics. They have been derived based on a review of the implementation of the 2020 goal to date and responding to the UNEA mandate to provide options for implementation of actions to reach relevant SDGs and targets up to and beyond 2020.

1. **Develop effective management systems: Address prevailing capacity gaps across countries, strengthen national and regional legislation using a life cycle approach, and further strengthen institutions and programs by** promulgating, aligning and enforcing legislation and policies, including full implementation of the GHS, promulgating legislation for industrial and consumer products, and taking measure to address illegal international traffic; developing national and regional chemicals and waste management action plans and programmes, linked to globally agreed targets and priorities; and integrating chemicals and waste considerations into national and sectoral policies (e.g. agriculture, housing, transport and energy) to implement specific SDG targets.
Main actors: *Governments, Inter-Organization Programme for the Sound Management of Chemicals (IOMC), international and regional economic integration organizations*
2. **Mobilize resources: Scale up adequate resources and innovative financing for effective legislation, implementation and enforcement, particularly in developing countries and economies in transition, by** scaling up efforts to integrate chemicals and waste management into national and sectoral budgets; facilitating adequate external technical assistance, financial support and technology transfer to address issues causing greatest harm, including through new and innovative financing (e.g. fiscal incentives, cost recovery instruments, green bonds, venture capital); and strengthening the integrated approach to financing through assessing its effectiveness and renewed commitment across all three components (mainstreaming, industry involvement, and dedicated external financing).
Main actors: *Governments, the private sector, civil society, the financial sector and investors*
3. **Assess and communicate hazards: Fill global data and knowledge gaps, and enhance international collaboration to advance chemical hazard assessments, classifications and communication by** sharing existing hazard data and assessments globally, and increasing the mutual acceptance of testing data and hazard assessments across countries based on accepted methods and scientific criteria; developing a global database of assessed and classified chemicals for information-sharing and promoting harmonization of classifications; and setting targets to fill data gaps to fully understand globally the hazards of substances in commerce, and assessing progress.
Main actors: *Governments, the private sector, IOMC, international and regional organizations, academia*
4. **Assess and manage risks: Refine and share chemical risk assessment and risk management approaches globally to promote safe and sustainable use of chemicals throughout their life cycle by** sharing knowledge on existing risk assessment and management approaches and tools (e.g. exposure scenarios) more widely; further developing and refining exposure, risk assessment and life cycle assessment methods; and taking into account and benefiting from opportunities for accelerated and effective risk management, such as placing the burden of proof on producers, advancing informed and non-regrettable substitution of chemicals of high concern, and using generic risk-based approaches, when possible.
Main actors: *National and regional agencies, IOMC, academia, the private sector*
5. **Use life cycle approaches: Advance widespread implementation of sustainable supply chain management, full material disclosure, transparency and sustainable product design by** promoting wide implementation of corporate sustainability and sustainable procurement policies; developing harmonized approaches across sectors to share chemical information and to advance full material disclosure across supply chains, including chemical-intensive industry sectors and the recycling/waste sector; strengthening collaboration by all actors in the supply chain in designing and using safer

chemicals and sustainable products; and promoting the integration of chemicals and waste considerations into corporate sustainability metrics and reporting.

Main actors: *The private sector, Governments, IOMC, international organizations*

6. **Strengthen corporate governance: Enable and strengthen chemicals and waste management aspects of corporate sustainability policies, sustainable business models, and reporting by** encouraging private sector frontrunner action to further develop voluntary standards that exceed basic compliance, and reviewing their effectiveness through interested stakeholders; promoting sustainable business models, such as chemical leasing and eco-industrial parks; and enhancing systematic use by investors of corporate sustainability and chemical footprint reporting, covering chemicals and waste management performance.

Main actors: *The private sector, Governments, international organizations, the financial sector and investors*

7. **Educate and innovate: Integrate green and sustainable chemistry in education, research, and innovation policies and programs by** reforming chemistry curricula in tertiary, secondary, primary and professional education; scaling up research initiatives, and technology innovation policies and programmes, that advance green and sustainable chemistry, particularly for start-up companies; and facilitating a better global understanding of green and sustainable chemistry concepts.

Main actors: *Governments, academia, international organizations, green and sustainable chemistry networks, the financial sector and investors, civil society, the private sector*

8. **Foster transparency: Empower workers, consumers and citizens to protect themselves and the environment by** disclosing robust and understandable information about hazardous chemicals in the supply chain to workers, consumers, citizens and communities; scaling up innovative programmes and technology applications to facilitate a better understanding by individuals of chemical and waste risks, and engaging citizens in data collection through citizen science; promoting and supporting meaningful and active participation by all actors of civil society, particularly women, workers and indigenous communities, in regulatory and other decision-making processes that relate to chemical safety; and taking action so that citizens have ready access to justice.

Main actors: *Governments, the private sector, civil society, citizens, workers, consumers*

9. **Bring knowledge to decision-makers: Strengthen the science-policy interface and use of science in monitoring progress, priority setting, and policy making throughout the life cycle of chemicals and waste by** taking steps to harmonize scientific research protocols (e.g. for biomonitoring); developing science-based criteria to identify emerging issues at the international level, taking into account harm (e.g. using health impact information) and monitoring their implementation; providing research funding to fill identified gaps and priorities; and developing a study on the global costs of inaction, and benefits of action, on chemicals and waste management, comparable to the Stern Review on the Economics of Climate Change; and developing and improving institutional mechanisms to improve knowledge generation and management.

Main actors: *Governments, academia, IOMC, international organizations*

10. **Enhance global commitment: Establish an ambitious and comprehensive global framework for chemicals and waste beyond 2020, scale up collaborative action, and track progress by** developing an aspirational, overarching and widely owned global framework that encourages engagement by all relevant stakeholders; developing global targets, milestones and indicators that distinguish between outputs and impacts; providing opportunities for sharing internationally, and for input or peer reviews, action plans and roadmaps by stakeholders under a beyond 2020 framework; considering how corporate sustainability metrics and reporting can play a stronger role in measuring progress in a beyond 2020 framework; and monitoring, tracking and reviewing collective action and progress and making adjustments in regard to ambition, as needed.

Main actors: *All stakeholders participating in the intersessional process on beyond 2020*

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**Strategic Approach
to International
Chemicals Management**

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

Global Chemicals Outlook II Summary for Policymakers: From Legacies to Innovative Solutions - Implementing the 2030 Agenda for Sustainable Development

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the summary for policymakers of the Global Chemicals Outlook II, received from the United Nations Environment Programme. The report is presented in the annex as received and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex**Global Chemicals Outlook II Summary for Policymakers: From Legacies to Innovative Solutions - Implementing the 2030 Agenda for Sustainable Development***Summary*

The Executive Director of the United Nations Environment Programme (UNEP) has the honour to present, annexed to the present note, the summary for policymakers of the *Global Chemicals Outlook II: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development*, prepared under the guidance of the Steering Committee of the *Global Chemicals Outlook II* with participation from all regions and a wide range of stakeholders.

The *Global Chemicals Outlook II* has been prepared in response to Governing Council decision 27/12,¹ adopted in 2013, which requested the Executive Director to continue work on the *Global Chemicals Outlook*, and United Nations Environment Assembly resolution 2/7,² adopted in 2016, which requested the Executive Director to submit an update of the first *Global Chemicals Outlook*, addressing inter alia the work carried out particularly in relation to lacking or inadequate data to assess progress towards the 2020 goal, the development of non-chemical alternatives, and the linkages between chemicals and waste, in coordination with the *Global Waste Management Outlook*, and providing scientific input and options for implementation of actions to reach relevant Sustainable Development Goals and targets up to and beyond 2020. Resolution 2/7 included a request to address the issues identified as emerging policy issues by the International Conference on Chemicals Management, as well as other issues where emerging evidence indicates a risk to human health and the environment.

The summary for policymakers, a longer summary and the full *Global Chemicals Outlook II* will also be made available.

¹ UNEP/GC.27/12.

² UNEP/EA.2/Res.7.

Global Chemicals Outlook II: Key Findings

The global goal to minimize adverse impacts of chemicals and waste will not be achieved by 2020. Solutions exist, but more ambitious worldwide action by all stakeholders is urgently required.



1. The size of the global chemical industry exceeded United States dollars 5 trillion in 2017. It is projected to double by 2030. Consumption and production are rapidly increasing in emerging economies. Global supply chains, and the trade of chemicals and products, are becoming increasingly complex.



2. Driven by global megatrends, growth in chemical-intensive industry sectors (e.g. construction, agriculture, electronics) creates risks, but also opportunities to advance sustainable consumption, production and product innovation.



3. Hazardous chemicals and other pollutants (e.g. plastic waste and pharmaceutical pollutants) continue to be released in large quantities. They are ubiquitous in humans and the environment and are accumulating in material stocks and products, highlighting the need to avoid future legacies through sustainable materials management and circular business models.



4. The benefits of action to minimize adverse impacts have been estimated in the high tens of billions of United States dollars annually. The World Health Organization estimated the burden of disease from selected chemicals at 1.6 million lives in 2016 (this is likely to be an underestimate). Chemical pollution also threatens a range of ecosystem services.



5. International treaties and voluntary instruments have reduced the risks of some chemicals and wastes, but progress has been uneven and implementation gaps remain. As of 2018, more than 120 countries had not implemented the Globally Harmonized System of Classification and Labelling of Chemicals.



6. Addressing legislation and capacity gaps in developing countries and emerging economies remains a priority. However, resources have not matched needs. There are opportunities for new and innovative financing (e.g. through cost recovery and engagement of the financial sector).



7. Significant resources can be saved by sharing knowledge on chemical management instruments more widely, and by enhancing mutual acceptance of approaches in areas ranging from chemical hazard assessment to alternatives assessment.



8. Frontrunner companies – from chemical producers to retailers – are introducing sustainable supply chain management, full material disclosure, risk reduction beyond compliance, and human rights-based policies. However, widespread implementation of these initiatives has not yet been achieved.



9. Consumer demand as well as green and sustainable chemistry education and innovation (e.g. through start-ups) are among the important drivers of change. They can be scaled up through enabling policies, reaping the potential benefits of chemistry innovations for sustainable development.



10. Global knowledge gaps can be filled. This can be achieved, for example, by taking steps to harmonize research protocols, considering health or environmental impact information and harm caused to set priorities, and strengthening the science-policy interface through enhanced collaboration of scientists and decision-makers.

Introduction

1. The Global Chemicals Outlook II (GCO-II) is released at a crucial moment. Since publication of the GCO-I in 2013, the global consumption and production of chemicals¹ has continued to grow, with a number of trends that are a cause for concern. This period has also witnessed the adoption in 2015 of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs), which include several specific targets related to chemicals and waste (see Table 1). Shortly thereafter, the International Conference on Chemicals Management (ICCM) initiated an intersessional process to prepare by 2020 recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020.
2. In 2002, the World Summit on Sustainable Development had adopted the Johannesburg Plan of Implementation, in which Governments agreed to “achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment [...]”. The 2006 Strategic Approach to International Chemicals Management (SAICM) Overarching Policy Strategy built upon this timeline. It referred to the “2020 goal”, a term subsequently used by the ICCM. The 2020 timeline was reiterated at the 2012 Rio plus 20 Summit (referring to chemicals and hazardous waste) and in SDG Target 12.4 (referring to chemicals and all wastes).

Table 1: Chemicals and waste in the 2030 Agenda: SDG Targets 3.9 and 12.4

SDG 3: Ensure healthy lives and promote well-being for all at all ages	
	Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
SDG 12: Ensure sustainable consumption and production patterns	
	Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

Key messages for policymakers: a call for more ambitious action at all levels

The 2020 goal will not be achieved: business as usual is not an option

3. Despite global agreement reached at several high-level United Nations (UN) Conferences and significant action already taken, findings of the GCO-II indicate that the sound management of chemicals and waste will not be achieved by 2020. Trends data suggest that the doubling of the global chemicals market between 2017 and 2030 will increase global chemical releases, exposures, concentrations and adverse health and environmental impacts unless the sound management of chemicals and waste is achieved worldwide. Business as usual is therefore not an option. Accelerating progress in order to achieve sound management, and the minimization of adverse impacts, within the context of the 2030 Agenda is, however, possible under a sustainability scenario. This will require more ambitious, urgent and worldwide collaborative action by all stakeholders and in all countries. [Part I, Ch. 1-8; Part II, Ch. 3-5, Part IV, Part V]

A comprehensive global framework is needed, with ambitious priorities and coherent indicators

4. To address gaps, a global framework for the sound management of chemicals and waste beyond 2020 needs to be developed that is aspirational and comprehensive, and creates incentives to foster commitment and engagement by all relevant actors in the value chain. Drawing upon lessons learned from the Strategic Plan for Biodiversity 2011-2020, a global common vision, strategic goals, targets and

¹ The term “chemicals” is understood throughout this document to include pharmaceuticals, unless otherwise noted.

indicators could facilitate linkages across all relevant agreements and initiatives, and make reporting schemes simpler, country-driven and linked to global targets. Under such a scheme, indicators would need to distinguish between outputs (e.g. adoption of legislation) and impacts (e.g. reduction of adverse impacts from hazardous chemicals). [Part II, Ch. 2; Part V, Ch. 2-3]

Implementation of actions up to and beyond 2020

5. Responding to the UN Environment Assembly (UNEA) mandate and based on a review of the implementation of the 2020 goal to date, the GCO-II presents a range of options for implementation of actions (hereinafter referred to as “actions”) to reach relevant SDGs and targets up to and beyond 2020. The identified actions are considered of particular relevance for developing and implementing an approach for chemicals and waste management beyond 2020. Equally important, they target policy- and decision-makers around the world and from all stakeholder groups to generate enhanced commitment for implementation. They also cover commitments already agreed internationally which require urgent attention and renewed commitment due to implementation gaps identified in the GCO-II. Examples include implementation of the GHS and the strengthening of basic chemicals and waste management systems. The actions are presented under ten topics which were derived using a back-casting approach, imaging a sustainability scenario, where legacy problems are addressed and future legacies are avoided, including through green and sustainable chemistry innovation and sustainable consumption and production.



Develop effective management systems: Address prevailing capacity gaps across countries, strengthen national and regional legislation using a life cycle approach, and further strengthen institutions and programmes.



Mobilize resources: Scale up adequate² resources and innovative financing for effective legislation, implementation and enforcement, particularly in developing countries and economies in transition.



Assess and communicate hazards: Fill global data and knowledge gaps, and enhance international collaboration to advance chemical hazard assessments, classifications and communication.



Assess and manage risks: Refine and share chemical risk assessment and risk management approaches globally, in order to promote safe and sustainable use of chemicals throughout their life cycle.



Use life cycle approaches: Advance widespread implementation of sustainable supply chain management, full material disclosure, transparency and sustainable product design.



Strengthen corporate governance: Enable and strengthen the chemicals and waste management aspects of corporate sustainability policies, sustainable business models, and reporting.



Educate and innovate: Integrate green and sustainable chemistry in education, research, and innovation policies and programmes.



Foster transparency: Empower workers, consumers and citizens to protect themselves and the environment.



Bring knowledge to decision-makers: Strengthen the science-policy interface and the use of science in monitoring progress, priority-setting, and policy-making throughout the life cycle of chemicals and waste.

² To facilitate better understanding of the term “adequate” in this context, further analysis and international dialogue are needed on certain topics such as sustainability of funding.

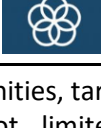


Enhance global commitment: Establish an ambitious and comprehensive global framework for chemicals and waste beyond 2020, scale up collaborative action, and track progress.

Using the Sustainable Development Goals and targets to stimulate integrated action beyond 2020

6. In addition to action to meet the SDG targets that directly address chemicals and waste management (SDG 3.9 and 12.4), the 2030 Agenda provides a renewed opportunity to strengthen inter-ministerial coordination mechanisms, and to integrate chemicals and waste considerations into relevant sector policies and actions (see Table 2 for examples). While progress has been made in advancing chemicals and waste considerations in some sectors (e.g. in agriculture, through the International Code of Conduct on Pesticide Management, and in health, through the World Health Organisation (WHO) Chemicals Road Map), other sectors (e.g. housing) have so far received limited international attention. [Part V, Ch. 1-3]

Table 2: Integrating chemicals and waste management, and green and sustainable chemistry innovation, in relevant sectors: some opportunities

Sectors	SDG targets		Examples of opportunities for management and innovation
Agriculture and food		Target 2.4: sustainable food production	Scale up integrated pest management and agro-ecological approaches, including development and use of non-chemical alternatives and other good agricultural practices
Health		Target 3.8: safe medicines and vaccines	Sound management of pharmaceuticals and disinfectants that contribute to antimicrobial resistance
Energy		Target 7.a: clean energy research and technologies	Improve technologies using resource-efficient, sustainable materials when decarbonizing the energy sector
Housing		Target 11.1: safe housing	Reduce indoor air pollution through safer insulation and replace building materials of concern (e.g. asbestos)
Education		Target 4.7: education for sustainable development	Mainstream green and sustainable chemistry into relevant curricula
Finance		Target 17.3: financial resources from multiple sources	Enhance use of green and sustainable chemistry metrics as criteria in investment
The opportunities, targets and sectors in this table are not exhaustive. Other relevant sectors include (but are not limited to) industrial production, technology and innovation, infrastructure development, transport, mining, tourism, labour, trade, development cooperation, and justice.			

Enhancing commitment by current stakeholders and increasing engagement by new actors

7. The period up to the conclusion of the intersessional process, by 2020, provides a brief but critical window in which to develop an ambitious and comprehensive global framework – as well as to increase engagement by all stakeholders. To facilitate commitment, ownership, mutual accountability and collective tracking of progress to achieve the sound management of chemicals and waste, countries and all relevant stakeholders could develop, implement and share, internationally, results-based action plans and roadmaps. Stakeholders could pledge and showcase their action plans and

roadmaps within the beyond 2020 framework and benefit from the input of other stakeholders (which might take different forms, such as peer review). Pledges could be reviewed globally against agreed goals and targets, with adjustments made as appropriate. [Part V, Ch. 1-3]

While many chemicals are important for sustainable development, trends are a cause for major concerns, requiring urgent action

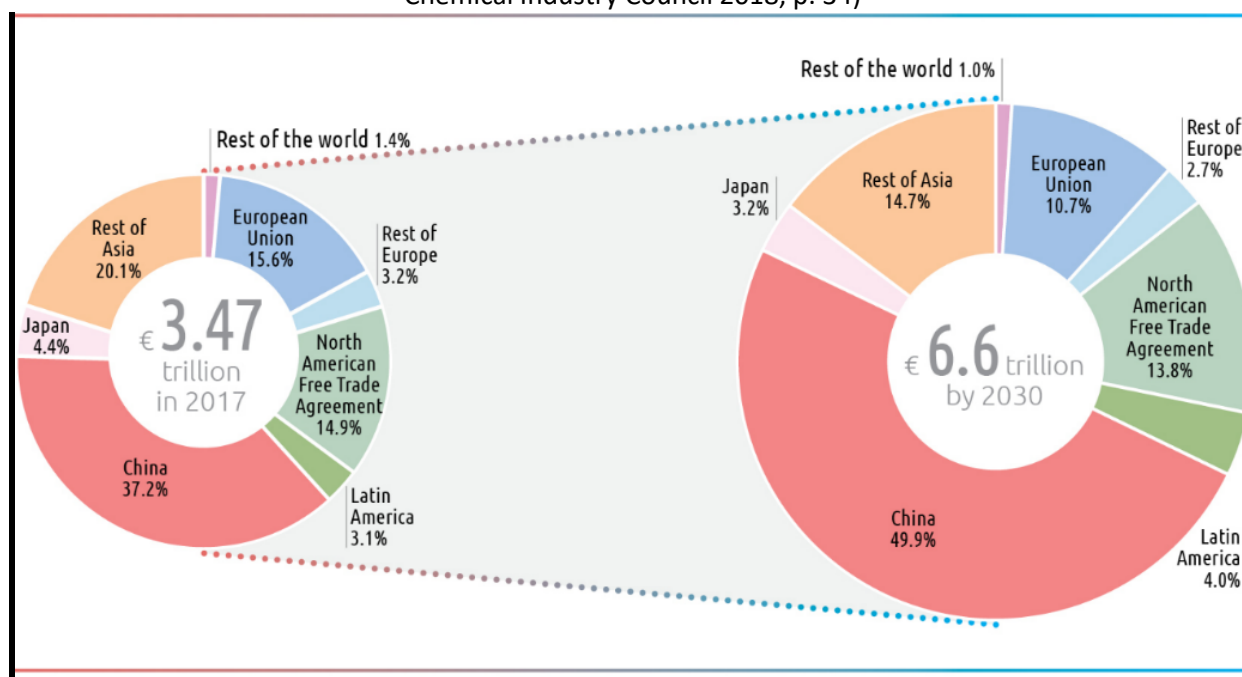
Sound management and innovations in chemistry are essential for sustainable development

8. From pharmaceuticals and plant protection products to the production of cars, computers and textiles, many manufactured chemicals have helped improve human health, food security, productivity and quality of life throughout the world. However, many chemicals and wastes have hazardous properties and continue to cause significant adverse impacts on human health and the environment because they are not properly managed. Innovations in chemistry and materials science have the potential to create safer chemicals, increase resource efficiency, and reduce the health and environmental impacts associated with the current global production and consumption system. [Part I, Ch. 1, 7; Part IV, Ch. 1]

The production, use and trade of chemicals are growing in all regions, driven by global megatrends

9. In 2018 the total number of industrial chemicals in commerce globally was estimated at 40,000 to 60,000, with 6000 of these chemicals accounting for more than 99 per cent of the total volume. According to 2018 data compiled by European Environment Agency, approximately 62 per cent of the total volume of chemicals consumed in Europe in 2016 were hazardous to health. Between 2000 and 2017, the global chemical industry's production capacity (excluding pharmaceuticals) almost doubled, from about 1.2 to 2.3 billion tonnes. If pharmaceuticals were included, global sales totalled United States dollars (USD) 5.68 trillion in 2017, making the chemical industry the second largest manufacturing industry in the world. Sales are projected to almost double again from 2017 to 2030 (see Figure 1). Projected growth will be highest in Asia, with China estimated to account for almost 50 per cent of global sales by 2030. High growth rates are also expected in Africa and the Middle East. [Part I, Ch. 1]

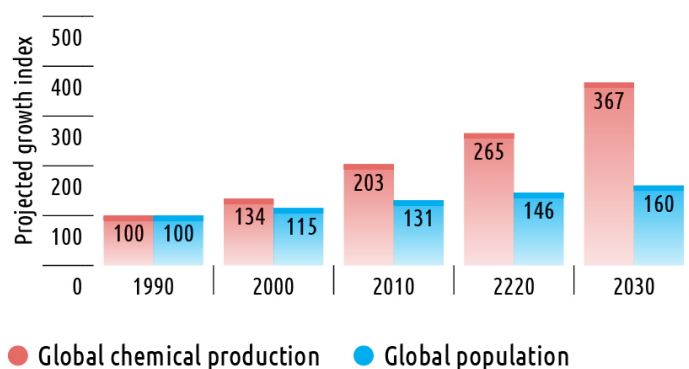
Figure 1: Projected growth in world chemical sales (excluding pharmaceuticals), 2017-2030 (European Chemical Industry Council 2018, p. 34)



10. Megatrends, such as global economic growth and global population dynamics, affect market demand for chemicals, creating both risks and opportunities. Growth in chemical-intensive industry sectors and

markets, such as construction, agriculture, electronics, cosmetics, mining and textiles, continues to drive growth in the markets for chemicals used in these sectors. Under a business as usual scenario, the rate of growth of chemical production is projected to exceed that of population growth at least until 2030 (see Figure 2). This means per capita consumption of chemicals is increasing steadily – highlighting the need to achieve sustainable consumption and production, as called for by SDG 12 of the 2030 Agenda. It also reinforces the need to decouple material use from economic growth, enhance resource- and eco-efficiency, advance sustainable materials management, and prioritize source reduction, reuse and recycling, as called for by the waste hierarchy. [Part I, Ch. 1, 3]

Figure 2: Growth of basic chemical production capacity vs. population growth (based on Cayuela and Hagan 2019 and UN Department of Economic and Social Affairs 2018)

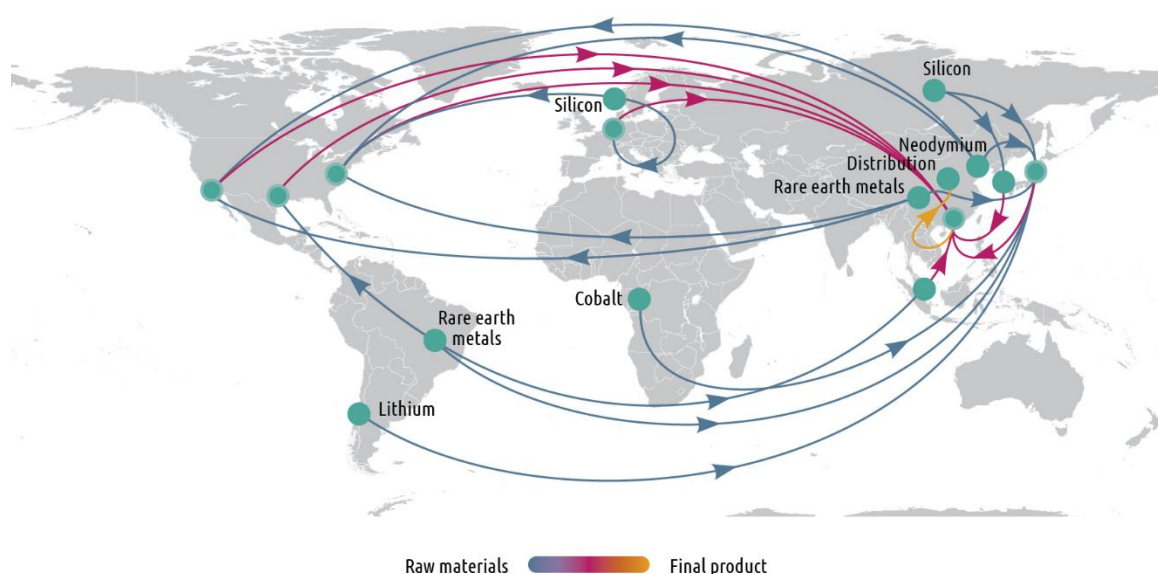


The growth rates of chemical production capacity are derived from past and projected growth rates for basic petrochemical building blocks (ethylene, propylene, butadiene, benzene, toluene, and xylenes).

Chemical-intensive products and complex global supply chains create challenges for circularity

11. Modern-day products often contain hundreds of chemicals. Many of these chemicals may have hazardous properties. In addition, unintentional contaminants have been widely detected in a range of products, including toys. Specific challenges are created by the complexity of global supply chains (see Figure 3), the cross-border trade of chemicals and chemical-intensive products, and recycling. Recent research shows that the import of many products does not comply with the chemicals legislation of the importing country. Cross-border e-commerce, growing at 25 per cent annually, adds further complexity. Only 9 per cent of global material resources are recycled and many durable products and buildings, as well as infrastructure and machinery, that contain hazardous chemicals remain in human-made material stocks (estimated to weigh 30 trillion metric tons in 2016) for years to come, creating potential future legacies. Mirroring this trend, less than 9 per cent of the 6.3 billion metric tons of plastic waste generated up to 2015 has been recycled, while 12 per cent was incinerated and 79 per cent was disposed in landfills or in the environment. Full material disclosure of products, sound recycling and waste management, and sustainable product design are important actions to minimize potential future releases from material stocks and products, and to generate secondary raw materials in a circular economy that are safe and sustainable. [Part I, Ch. 4-5]

Figure 3: Illustration of the complexity of global supply chains: the case of an electronic product (Sourcemap 2012)



Large amounts of chemical pollutants are released from production, products and wastes, illustrating the inefficient use of resources

12. Production processes continue to generate significant chemical releases to air, water and soil as well as large amounts of waste, including hazardous waste. In the production of pharmaceuticals, for example, at least 25 kilograms (kg) of emissions and waste (and at times more than 100 kg) are generated for every kg of product, highlighting resource inefficiencies. Significant amounts of greenhouse gases are also emitted during the production of chemicals. In addition, chemical accidents in industrial facilities continue to release significant amounts of hazardous substances. Moreover, hazardous chemicals are released from chemical-intensive products: for example, microplastics are released to water and phthalates and brominated flame retardants to indoor air. A recent study suggests that releases of chemicals from consumer products (e.g. cosmetics and paints) have become the primary source of volatile organic pollutants from petrochemical sources in some industrialized cities. Developing countries and economies in transition face particular challenges, such as releases of heavy metals from battery recycling and of mercury from artisanal and small-scale gold mining, polluting air, water and soil [Part I, Ch. 4-5]

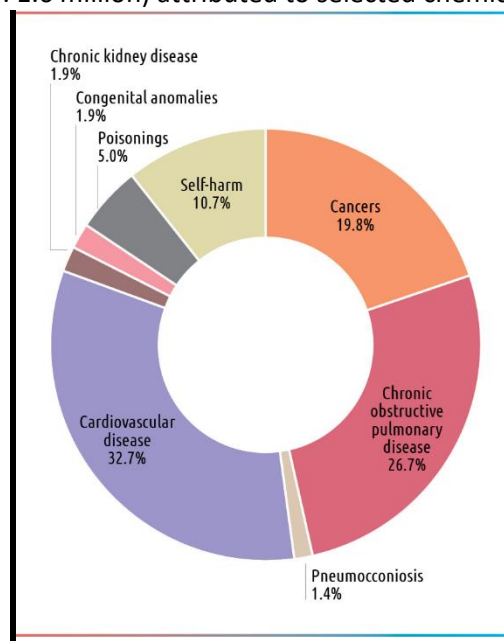
Chemical pollutants are ubiquitous in the environment and in humans

13. Chemical pollutants continue to be detected in air, water and soil and in biota in all regions. Soils throughout the world are contaminated by hazardous chemicals, including polychlorinated biphenyls (PCBs), heavy metals and certain pesticides. Many of these hazardous chemicals, as well as microplastics, are found in food for human consumption. Microplastics, pharmaceutical residues, mercury and many other substances of concern have been detected in water bodies and marine animals, which are often consumed by humans. Concentrations of chemical pollutants are found in some of the most remote and unexpected parts of the planet. For example, PCBs have been detected at high concentrations in animals 10,000 metres deep in ocean sediment, and certain organochlorine pesticides regulated under the Stockholm Convention have been found in the Himalayan glaciers. Chemicals of concern are also routinely detected in humans. Examples are dioxins and furans in breast milk, phthalates in urine, and heavy metals in human blood. Recent studies have detected previously banned flame retardants in the umbilical cord blood of newborn children, indicating one pathway, among others, for the transfer of legacy substances to new generations, which is a typical feature of persistent and bio-accumulative substances. [Part I, Ch. 6]

The burden of disease from chemicals is high, and vulnerable populations are particularly at risk

14. The 2017 report of the *Lancet* Commission on Pollution and Health identified chemical pollution as a significant and “almost certainly underestimated” contributor to the global burden of disease. In 2018, the WHO estimated the disease burden preventable through sound management and reduction of chemicals in the environment at around 1.6 million lives and around 45 million disability-adjusted life years (DALYs) in 2016 (see Figure 4). These are likely to be underestimates, given that they are based only on exposures to chemicals for which reliable global data exist (including lead causing intellectual disability, occupational carcinogens such as asbestos, and pesticides involved in self-inflicted injuries). The 2016 Global Burden of Disease study estimated that 500,000 deaths are attributable solely to lead exposure. In addition, chemical accidents in facilities continue to result in high human fatalities, adverse environmental impacts and large economic costs. [Part I, Ch. 7]

Figure 4: Deaths (total: 1.6 million) attributed to selected chemicals (WHO 2018, page 2)



15. Workers are typically subject to disproportionately high exposures to hazardous chemicals, particularly in small and medium-sized enterprises (SMEs) in low- and middle-income countries and in the informal economy, where they may not be sufficiently informed and protected. In 2015, almost 1 million workers died from exposure to hazardous substances, including dusts, vapours and fumes, based on estimates released by the International Labour Organisation. Foetuses, infants, children, pregnant women, the elderly and the poor are particularly susceptible to the effects of chemical exposures. The poor may be disproportionately exposed because they frequently live near relevant sources of releases, such as hazardous waste dumpsites and production facilities. Exposures of women and men to chemicals may also differ. For example, women are more likely to be exposed to hazardous chemicals contained in certain cosmetics, while men have significantly higher occupational exposures in certain sectors. [Part I, Ch. 7]

Chemical pollution threatens biota and ecosystem functions

16. A range of adverse impacts of chemical pollutants on biota continue to be observed. Examples include lethal and chronic effects on fish from brominated flame retardants; suppression of immune systems in seals and turtles due to exposure to PCBs and per- and polyfluoroalkyl substances; and feminization of male fish due to exposure to synthetic oestrogen. A 2018 study from India indicates that the drug diclofenac continues to adversely affect the health of the vulture population more than a decade after it was banned. Moreover, some pesticides have been found to negatively impact non-target insects and pollinators; excess use of phosphorous and nitrogen in agriculture continues to contribute to ocean dead zones around the world; and some chemicals put pressure on the health of coral reef

ecosystems. Studies also indicate that environmental releases of some antimicrobials, heavy metals and disinfectants contribute to antimicrobial resistance. [Part I, Ch. 7]

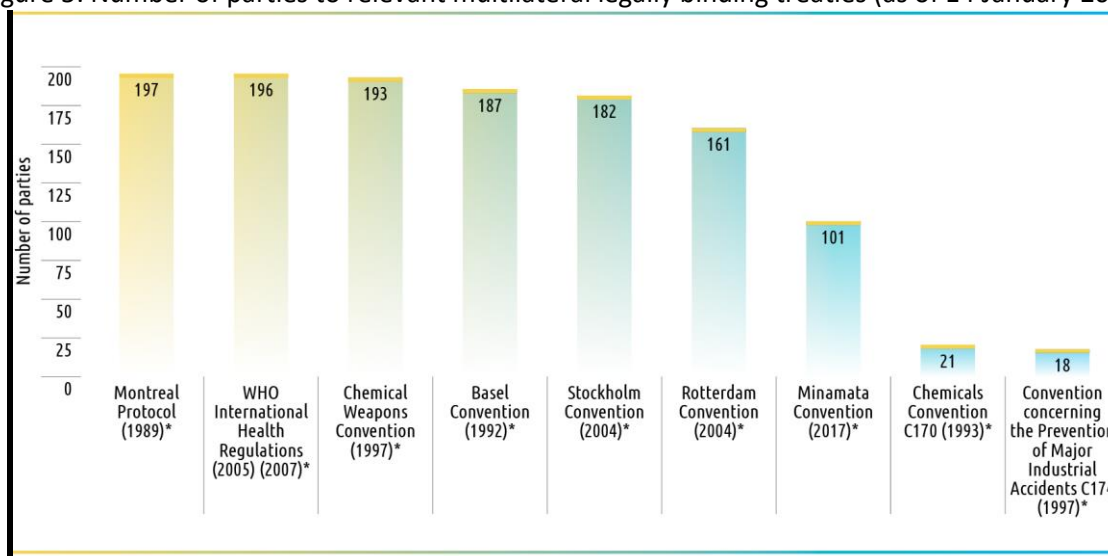
The costs of inaction and the benefits of action are estimated to be significant, but methods need to be refined

17. The costs associated with unsound management of chemicals and waste include productivity losses, health care costs, damage to ecosystems, litigation costs, and reputational damage to businesses. A 2015 study estimated the costs from neurobehavioral deficits caused by certain chemicals to be more than USD 170 billion per year in the European Union alone. Another study estimated the economic costs attributable to childhood lead in low and middle income countries at a total cost of international dollar 977 billion. Some studies estimate costs from environmental chemical exposures to be as high as several percentage points of global gross domestic product, with developing countries and economies in transition bearing the largest costs. Conversely, a 2017 study conservatively estimated the cumulative benefits of chemicals legislation in the European Union “in the high tens of billion Euro per year”. However, since data are still limited, robust socio-economic analysis is challenging and estimation methodologies need further refinement. A global study comparable to the Stern Review on the Economics of Climate Change does not exist. [Part I, Ch. 8]

Multilateral treaties address some chemicals and issues of global concern, but implementation challenges remain

18. The international community has taken concerted action through legally binding treaties on some of the most harmful chemicals and on some issues of global concern. Prominent examples include the multilateral treaties shown in Figure 5. These treaties have catalysed selected regulatory actions, raised awareness, and succeeded in reducing some exposures to the targeted chemicals and wastes. However, not all treaties have been universally ratified. Given that treaties are designed to address specific chemicals and issues, many hazardous substances are beyond their scope. While implementation of the Montreal Protocol is a notable success story, the extent to which the objectives of a number of other treaties have been achieved is uncertain. In the case of the Stockholm Convention, the 2016 effectiveness evaluation concluded that “the Convention provides an effective and dynamic framework to regulate persistent organic pollutants throughout their life cycle”. However, it identified areas for further work, such as gaps in regulatory and assessment schemes for industrial chemicals and the large remaining stockpiles of obsolete pesticides and PCBs. Significant progress has also been in the case of other treaties. Nevertheless, further efforts are needed to achieve full implementation, as in the case of the chemicals dimension of the International Health Regulations (2015). [Part II, Ch. 1, 3]

Figure 5: Number of parties to relevant multilateral legally binding treaties (as of 14 January 2019)



* year of entry into force

Voluntary international instruments cover a broader range of issues, but lack effective implementation

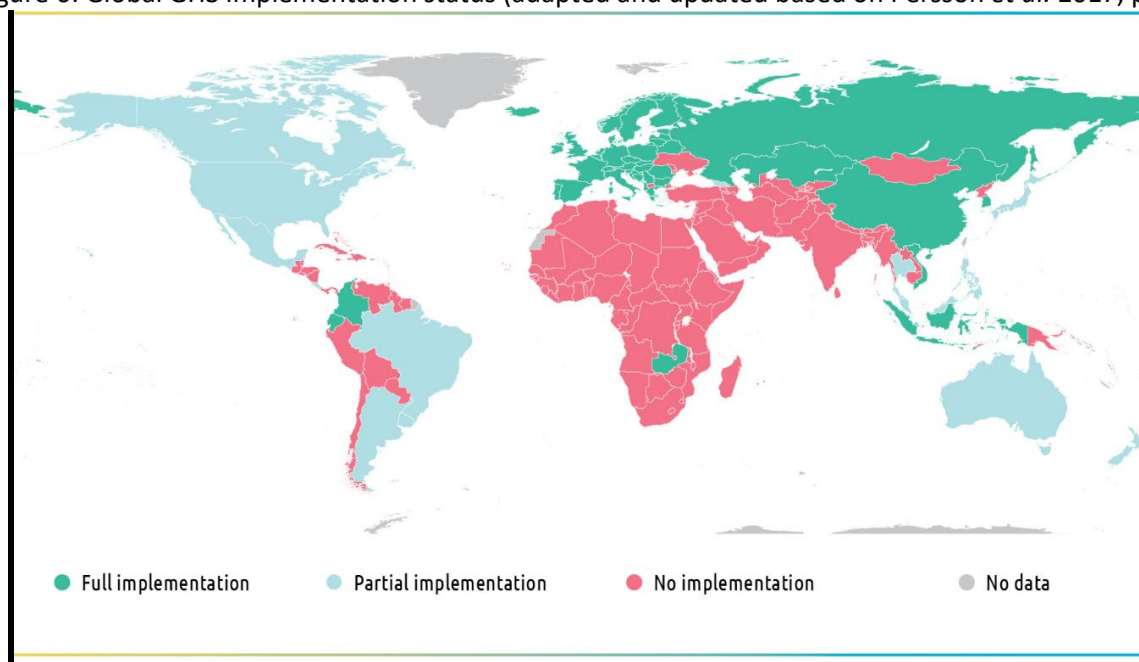
19. Several voluntary international instruments adopted by the governing bodies of international organizations address a wide range of chemicals and issues. Prominent examples include the new International Code of Conduct on Pesticide Management, approved in 2013, and the GHS, adopted in 2002. SAICM, adopted by the ICCM in 2006, supports a comprehensive life cycle approach for all hazardous chemicals. A 2018 independent evaluation of SAICM found that it is unique in its ambition as an inclusive multi-stakeholder, multi-sector voluntary policy framework. The evaluation also found that SAICM creates a collaborative space for raising awareness, increasing knowledge and reducing risks. However, it pointed out weaknesses, such as insufficient sectoral engagement; the capacity constraints of national focal points; lack of tools to measure progress; limited financing of activities; and insufficient and uneven advances in substantive areas such as illegal international traffic. The evaluation noted that the identification of, and actions taken on, the eight emerging policy issues (EPIs) and other issues of concern were a major strength. Nevertheless, it found that slow, modest and uneven progress has been made in implementing the EPIs. In light of the UNEA mandate to address EPIs, the GCO-II presents measures to further address existing EPIs. [Part II, Ch. 1, 3-4]

Some countries have taken recent regulatory action based on emerging evidence of risk

20. The UNEA also requested that the GCO-II addresses other issues where emerging evidence indicates a risk to human health and the environment. Using as a starting point recent regulatory risk management actions taken by public bodies since 2010 on chemicals or groups of chemicals not addressed at the international level, and to facilitate knowledge-sharing, the GCO-II identified the following eleven chemicals or groups of chemicals and issues associated with them: arsenic, bisphenol A, glyphosate, cadmium, lead, microbeads, neonicotinoids, organotins, polycyclic aromatic hydrocarbons, phthalates and triclosan. [Part II, Ch. 5]

Overall progress towards achieving the sound management of chemicals and waste is uneven across countries, regions and actors

21. While significant progress has been made towards achieving the sound management of chemicals and waste, major implementation gaps remain. In each region there is a set of distinct trends, challenges and opportunities. In particular, developing countries and economies in transition, including some with chemical production facilities, still lack basic chemicals and waste management systems, including legal and institutional capacities, Pollutant Release and Transfer Registers, poison centres, and capacities for hazard and risk assessment and risk management. The GHS is not operational in more than 120 countries, mostly developing countries and economies in transition (see Figure 6)_bookmark6. As of September 2018, only 37 per cent of countries had confirmed that they have legally binding controls on lead in paint. Concerning illegal international traffic, chemicals and waste (e.g. electronic waste) are frequently falsely declared while counterfeit products (e.g. pesticides and cosmetics) are traded across borders. While industry is involved through programmes such as Responsible Care®, universal coverage is yet to be achieved. Opportunities exist to review these programmes' effectiveness through the involvement of relevant stakeholders, as well as to scale up industry responsibility and leadership, drawing upon lessons learned, for example, from the Zero Discharge of Hazardous Chemicals initiative in the textile sector. [Part II, Ch. 3; Part III, Ch. 1-6]

Figure 6: Global GHS implementation status (adapted and updated based on Persson *et al.* 2017, p. 8)

A global coherent results, indicator and reporting framework is lacking

22. The current international framework for reporting and measuring progress in the area of chemicals and waste is spread across various treaties, voluntary chemicals and waste instruments, and the 2030 Agenda. A range of different – and not always complementary – indicators have been developed under various international agreements. Reporting rates under several agreements are low, particularly among developing countries and economies in transition. In some cases, reporting rates exhibit a downward trend. The combination of a fragmented indicators framework and low reporting makes it challenging to develop a global baseline, and to track progress in a systematic way. Moreover, the use of activity- or instrument-based indicators alone provides limited insights in assessing impacts achieved. Opportunities therefore exist to put in place a simple and coherent global indicators framework that distinguishes between outputs and impacts, creates linkages across international agreements (including the 2030 Agenda) and is supported by a simple, country-driven reporting scheme. [Part II, Ch. 2]

Solutions exist, but more ambitious, urgent and worldwide action is needed by all stakeholders

Regulatory systems based on a life cycle approach in all countries are critical

23. Establishing legal frameworks that address the life cycle of chemicals and waste is critical and a priority. Many countries, including several developing countries and economies in transition, have already made important headway in enacting laws, creating programmes, and implementing policies to achieve the sound management of chemicals and waste. Their success stories create the potential for cooperation, knowledge-sharing and replication. Valuable work has also been undertaken by countries through the development of national chemicals management profiles and plans, often prepared through multi-sectoral and multi-stakeholder collaboration. These initiatives provide a useful starting point for country-level action beyond 2020, taking into account SAICM's overall orientation and guidance. [Part II, Ch. 3]

Effective implementation requires adequate financing, technology transfer and technical assistance

24. The integrated approach to financing, welcomed by the Governing Council of the United Nations Environment Programme in 2013, includes the three components of mainstreaming, industry involvement, and dedicated external financing. Some countries have already integrated chemicals and waste management in their development planning and budgeting; have clarified responsibilities

between the public and private sector; have promoted extended producer responsibility and the internalization of costs by industry; and have used fiscal instruments, such as taxing hazardous chemicals. External funding (e.g. through the Global Environment Facility, or the Special Programme to support institutional strengthening) has been significant, but has not matched the need and demand for support, expressed by developing countries and economies in transition for building basic chemicals and waste management systems. Industry involvement has been equally important in mobilizing resources and built capacity, but gaps remain in increasing contributions to match responsibility and the required level of support. Further action is required to achieve full implementation of the integrated approach with respect to all three components. Action is also required in order to explore new opportunities such as sovereign wealth funds, philanthropic finance, and strengthened engagement of the financial sector and investors so as to mobilize and help guide their largely untapped resources to contribute to sustainable development. [Part II, Ch. 3; Part IV, Ch. 6]

Global knowledge-sharing and further harmonization of chemical management approaches can save significant resources

25. For many years, Governments, intergovernmental organizations, industry and other stakeholders have been developing and employing a range of approaches to identify chemical hazards, assess exposure and risks, implement risk management actions and assess alternatives, with a view to advancing informed substitution and avoiding regrettable substitutions, including through non-chemical alternatives. Valuable lessons have been learned in the practical application of these approaches. Opportunities have also emerged to enhance their effectiveness and streamline their use, especially by using computer-based estimation methods to replace, where possible, animal testing. Opportunities include the use of generic approaches for risk assessment; shifting the burden of proof from Government to industry; and stimulating assessment approaches which take into account broader sustainability considerations. Proactive and pre-emptive risk management – together with appropriate training – are particularly important in occupational settings, including in SMEs and in the informal sector. Experience shows that resources can be saved through international collaboration, such as sharing and mutually accepting chemical hazard data, assessments and classifications. Advances in this respect would be particularly helpful in developing countries and economies in transition. [Part III, Ch. 1-7]

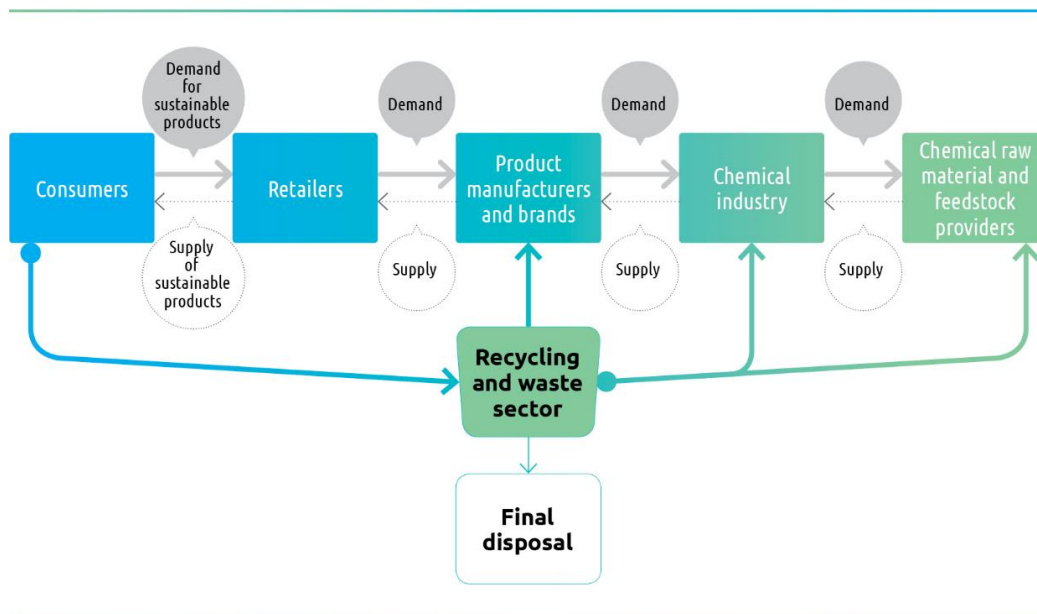
26. Countries may also save significant resources by aligning their approaches with those of other countries of regional bodies (including regional economic integration organizations), or with internationally agreed guidance – while maintaining a high standard of protection. Examples of such guidance include that developed by the Organisation for Economic Co-operation and Development and by the WHO. Altogether, these opportunities point to the value of further global knowledge-sharing and capacity building, building on work already undertaken by intergovernmental organizations and other stakeholders. [Part II, Ch. 3]

Opportunities exists to scale up effective corporate governance and sustainable supply chain management

27. A growing number of retailers, product manufacturers and chemical companies have included sustainability objectives, sustainable supply chain management (see Figure 7), and extended producer responsibility in their corporate policies. Industry action to advance the transparent flow of information on chemicals and materials throughout the supply chain is also gaining momentum. Yet universal implementation of these initiatives has not been achieved. Relevant measures to be taken include: scaling up voluntary standard-setting beyond compliance; harmonizing chemical management protocols across industry sectors (e.g. on full material disclosure and labelling of products); using life cycle assessment tools, metrics and reporting to address the sustainability of products throughout their life cycle; and scaling up the design of safer and more sustainable products and production processes. Promoting the engagement of (and developing capacity in) the recycling sector is important, so that secondary raw materials going back into the circular economy are safe and

sustainable. It is equally relevant to recognize the role of informal actors at various stages in the supply chain. Unless the measures described above (and others) are put in place, companies may face significant economic risks. For example, multinational companies recently experienced heavy losses in stock values in the range of USD billions, or had to pay significant compensation, due to allegations of lack of diligence or unsound management practices. [Part IV, Ch. 4-5, 7]

Figure 7: Interface of demand and supply in driving the sustainability of chemicals in the supply chain



Enhanced transparency is needed to empower workers and citizens and protect the environment

28. Providing enhanced access to robust information to workers, consumers and communities as well as to foster understanding thereof is a prerequisite to achieve the sound management of chemicals and waste. Workers can only protect themselves if they have access to chemical hazard and safety information. Providing citizens and consumers with robust information on hazardous chemicals in products allows them not only to protect themselves, but also to shape market demand for safer and more sustainable products. The smartphone app ToxFox, for example, provides information about endocrine disrupting chemicals in cosmetics. It also allows users to submit inquiries about hazardous chemicals. In addition, new and innovative citizen science tools are available that allow citizens and workers to collect and share knowledge e.g. on high levels of occupational exposure. More efforts are needed to promote access to (and understanding of) this information, particularly in developing countries and economies in transition. [Part IV, Ch. 8]

Strengthening the interface of chemicals and waste management and human rights

29. In 2012, the UN Human Rights Council (HRC) affirmed “that the way hazardous substances and wastes are managed throughout their lifecycle, including manufacturing, distribution, use and final disposal, may have an adverse impact on the full enjoyment of human rights”. In an August 2018 report to the HRC, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes recommended that “states must ensure that legislation and other practices reflect their duty to respect, protect and fulfil human rights obligations implicated by hazardous substances and wastes [...] [and] that victims of the effects of hazardous substances and wastes have access to an effective remedy”, further noting that “the right to information is critical in the context of toxics”. Furthermore, the Special Rapporteur proposed 15 principles to help Governments and businesses better protect human rights with respect to exposure to hazardous chemicals. These measures are relevant to strengthening chemicals and waste management beyond 2020. Some companies, including from the chemical industry, have already

committed to respect human rights, along the lines of the UN's Guiding Principles on Business and Human Rights. Other companies may consider following suit. [Part IV, Ch. 8]

Green and sustainable chemistry education, innovation and sustainable business models can benefit from enabling support

30. A number of groundbreaking innovations in chemistry and materials science – for example fast-charging solid-state batteries, or the use of water to replace toxic solvents in production – have been achieved or are on the horizon, illustrating the potential of chemistry to solve societal challenges. The concepts of green and sustainable chemistry seek – and have the potential – to help advance innovation towards more efficient and safer chemicals, production processes and products throughout the life cycle. Sustainable chemistry criteria, if further developed internationally, may provide valuable guidance for verifying whether innovations in chemistry are fully compatible with sustainable development. Scaling up green and sustainable chemistry education, research and innovation requires enabling policies, programmes and financing. This includes curricula reform to integrate toxicology, green chemistry and sustainable chemistry at all levels in order to foster a new generation of chemists. Green and sustainable chemistry research and innovation can be incentivized through public funding, awarding of subsidies, and blended financing (including through start-up companies). Similarly, policy and fiscal incentives can help nurture and scale up sustainable business models, such as chemical leasing. [Part IV, Ch. 1-4]

Filling knowledge gaps through strengthening the science-policy interface

31. Although a wealth of data and knowledge has been generated, many data gaps and unknowns remain. They include, for example, chemical hazard data for many chemicals in commerce; environmental, health and safety data; outdoor and indoor chemical releases; exposures and concentrations in humans and the environment; and the adverse impacts of chemicals (e.g. on health). Disparities remain in data collection and availability across time and countries, making the identification of baselines, trends, and emerging issues and priorities challenging. Industry has a critical role and responsibility in generating and disseminating relevant data. Opportunities exist to provide better and more coherent scientific information for policy-making. This can be achieved, for example, by taking steps towards cost effective harmonization of data generation and collection, and respective research protocols (e.g. on releases and biomonitoring), strengthening monitoring and surveillance capacities (including those of medical professionals), and sharing data more systematically at all levels [Part I, Ch. 1, 5-9; Part II, Ch. 1, 3; Part III, Ch. 2-3]

32. Further approaches and mechanisms could be developed to strengthen two-way communication, support and collaboration between the scientific community and policymakers, and to develop a problem-solving oriented research agenda and protocols on priority topics. Stakeholders could find value in further exploring methodologies that facilitate more systematic identification of future priorities at the international level, for example by using information on health and environmental impacts and harm caused, and by drawing on information from risk assessments. Improved science-policy interaction can also help in identifying issues early on, priorities, as well as the corresponding specific and measurable targets that guide their implementation. [Part I, Ch. 9; Part II, Ch. 3-4; Part III, Ch. 2-3]

Annex: Actions up to and beyond 2020 identified through GCO-II

As a contribution to strengthening implementation of the sound management of chemicals and waste and minimizing their adverse impacts, the GCO-II identified the following actions, grouped under 10 topics. They have been derived based on a review of the implementation of the 2020 goal to date and responding to the UNEA mandate to provide options for implementation of actions to reach relevant SDGs and targets up to and beyond 2020.

1. **Develop effective management systems: Address prevailing capacity gaps across countries, strengthen national and regional legislation using a life cycle approach, and further strengthen institutions and programs by** promulgating, aligning and enforcing legislation and policies, including full implementation of the GHS, promulgating legislation for industrial and consumer products, and taking measure to address illegal international traffic; developing national and regional chemicals and waste management action plans and programmes, linked to globally agreed targets and priorities; and integrating chemicals and waste considerations into national and sectoral policies (e.g. agriculture, housing, transport and energy) to implement specific SDG targets.
Main actors: *Governments, Inter-Organization Programme for the Sound Management of Chemicals (IOMC), international and regional economic integration organizations*
2. **Mobilize resources: Scale up adequate resources and innovative financing for effective legislation, implementation and enforcement, particularly in developing countries and economies in transition, by** scaling up efforts to integrate chemicals and waste management into national and sectoral budgets; facilitating adequate external technical assistance, financial support and technology transfer to address issues causing greatest harm, including through new and innovative financing (e.g. fiscal incentives, cost recovery instruments, green bonds, venture capital); and strengthening the integrated approach to financing through assessing its effectiveness and renewed commitment across all three components (mainstreaming, industry involvement, and dedicated external financing).
Main actors: *Governments, the private sector, civil society, the financial sector and investors*
3. **Assess and communicate hazards: Fill global data and knowledge gaps, and enhance international collaboration to advance chemical hazard assessments, classifications and communication by** sharing existing hazard data and assessments globally, and increasing the mutual acceptance of testing data and hazard assessments across countries based on accepted methods and scientific criteria; developing a global database of assessed and classified chemicals for information-sharing and promoting harmonization of classifications; and setting targets to fill data gaps to fully understand globally the hazards of substances in commerce, and assessing progress.
Main actors: *Governments, the private sector, IOMC, international and regional organizations, academia*
4. **Assess and manage risks: Refine and share chemical risk assessment and risk management approaches globally to promote safe and sustainable use of chemicals throughout their life cycle by** sharing knowledge on existing risk assessment and management approaches and tools (e.g. exposure scenarios) more widely; further developing and refining exposure, risk assessment and life cycle assessment methods; and taking into account and benefiting from opportunities for accelerated and effective risk management, such as placing the burden of proof on producers, advancing informed and non-regrettable substitution of chemicals of high concern, and using generic risk-based approaches, when possible.
Main actors: *National and regional agencies, IOMC, academia, the private sector*
5. **Use life cycle approaches: Advance widespread implementation of sustainable supply chain management, full material disclosure, transparency and sustainable product design by** promoting wide implementation of corporate sustainability and sustainable procurement policies; developing harmonized approaches across sectors to share chemical information and to advance full material disclosure across supply chains, including chemical-intensive industry sectors and the recycling/waste sector; strengthening collaboration by all actors in the supply chain in designing and using safer

chemicals and sustainable products; and promoting the integration of chemicals and waste considerations into corporate sustainability metrics and reporting.

Main actors: *The private sector, Governments, IOMC, international organizations*

6. **Strengthen corporate governance: Enable and strengthen chemicals and waste management aspects of corporate sustainability policies, sustainable business models, and reporting by** encouraging private sector frontrunner action to further develop voluntary standards that exceed basic compliance, and reviewing their effectiveness through interested stakeholders; promoting sustainable business models, such as chemical leasing and eco-industrial parks; and enhancing systematic use by investors of corporate sustainability and chemical footprint reporting, covering chemicals and waste management performance.

Main actors: *The private sector, Governments, international organizations, the financial sector and investors*

7. **Educate and innovate: Integrate green and sustainable chemistry in education, research, and innovation policies and programs by** reforming chemistry curricula in tertiary, secondary, primary and professional education; scaling up research initiatives, and technology innovation policies and programmes, that advance green and sustainable chemistry, particularly for start-up companies; and facilitating a better global understanding of green and sustainable chemistry concepts.

Main actors: *Governments, academia, international organizations, green and sustainable chemistry networks, the financial sector and investors, civil society, the private sector*

8. **Foster transparency: Empower workers, consumers and citizens to protect themselves and the environment by** disclosing robust and understandable information about hazardous chemicals in the supply chain to workers, consumers, citizens and communities; scaling up innovative programmes and technology applications to facilitate a better understanding by individuals of chemical and waste risks, and engaging citizens in data collection through citizen science; promoting and supporting meaningful and active participation by all actors of civil society, particularly women, workers and indigenous communities, in regulatory and other decision-making processes that relate to chemical safety; and taking action so that citizens have ready access to justice.

Main actors: *Governments, the private sector, civil society, citizens, workers, consumers*

9. **Bring knowledge to decision-makers: Strengthen the science-policy interface and use of science in monitoring progress, priority setting, and policy making throughout the life cycle of chemicals and waste by** taking steps to harmonize scientific research protocols (e.g. for biomonitoring); developing science-based criteria to identify emerging issues at the international level, taking into account harm (e.g. using health impact information) and monitoring their implementation; providing research funding to fill identified gaps and priorities; and developing a study on the global costs of inaction, and benefits of action, on chemicals and waste management, comparable to the Stern Review on the Economics of Climate Change; and developing and improving institutional mechanisms to improve knowledge generation and management.

Main actors: *Governments, academia, IOMC, international organizations*

10. **Enhance global commitment: Establish an ambitious and comprehensive global framework for chemicals and waste beyond 2020, scale up collaborative action, and track progress by** developing an aspirational, overarching and widely owned global framework that encourages engagement by all relevant stakeholders; developing global targets, milestones and indicators that distinguish between outputs and impacts; providing opportunities for sharing internationally, and for input or peer reviews, action plans and roadmaps by stakeholders under a beyond 2020 framework; considering how corporate sustainability metrics and reporting can play a stronger role in measuring progress in a beyond 2020 framework; and monitoring, tracking and reviewing collective action and progress and making adjustments in regard to ambition, as needed.

Main actors: *All stakeholders participating in the intersessional process on beyond 2020*

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Strategic Approach
to International
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**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, Uruguay 2-4 April 2019

Item 4 (a) of the provisional agenda*

**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Progress report for period 2014 - 2016**

Progress in Strategic Approach Implementation for 2014-2016

Note by the secretariat

The secretariat has the honour to circulate, for the information of participants, a report on progress in the implementation of the Strategic Approach to International Chemicals Management for 2014–2016 (see annex). The secretariat has prepared the report in order to capture the information available from the reporting process. A summary of the report on progress in the implementation of the Strategic Approach for the period 2014–2016 (SAICM/OEWG.3/5) is also available to participants. The Open-ended Working Group may wish to take note of the information contained therein. The report has not been formally edited.

* SAICM/OEWG.3/1

Annex

Progress in Strategic Approach Implementation for 2014-2016

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POLICY SUMMARY

1. The Overarching Policy Strategy, in paragraph 24, provides that the International Conference on Chemicals Management (ICCM) will undertake periodic reviews of SAICM.
2. The International Conference on Chemicals Management at its fourth session (ICCM4) from 28 September–2 October 2015 held in Geneva, Switzerland, in resolution IV paragraph 18, requested the secretariat to develop a third progress report including achievements, strengths and weaknesses on Strategic Approach to International Chemical Management for the period 2014–2016 and an analysis of the 20 indicators of progress for consideration by the Open-ended Working Group at its third meeting.
3. This progress report presents the results of the third SAICM reporting process (PR3) with the data covering the period 2014–2016¹ and an analysis of the 20 indicators of progress for consideration by the Open-ended Working Group.
4. The Conference also directed, in resolution IV paragraph 18, the Open-ended Working Group to consider the need for a report for the period 2017–2019 for consideration by the Conference at its fifth session.
5. Submissions from 54 governments, five intergovernmental organizations, four non-governmental organizations, one civil society and two private sector bodies were received. The overall response rate for the government responses was 28 per cent. The regional variations were considerably large with Western Europe and Other Groups and Central and Eastern Europe regions being greatly represented and the African region being in absolute under-representation.
6. In addition, a comprehensive analysis of data collected by the participation organizations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) on the eight IOMC indicators of progress on the sound management of chemicals and an analysis of funded projects by the Global Environment Facility on sound management of chemicals and waste was performed in order to provide a better picture of global status.
7. In the analysis, a point-based system was applied in order to acquire a score for each respondent for the 20 indicators of progress and SAICM Strategic Objectives. The average score of the respondents was then aggregated by regions and development status in order to be able to compare the progress among the regions and with the previous progress reports.
8. The report uses the SAICM regional groupings for much of the analysis: Africa (AFR), Asia-Pacific (ASP), Central and Eastern European (CEE), Latin American and the Caribbean (LAC), and Western Europe and Others group (WEOG). In addition, a ‘World’ grouping represents the international organizations including Organization for Economic Cooperation and Development (OECD), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), The United Nations Institute for Training and Research (UNITAR), and the World Health Organization (WHO) who all submitted reports to PR3.
9. The analysis of data in relation to different development categories, non-DAC or DAC (i.e. all countries and territories eligible to receive Official Development Assistance as determined by the Development Assistance Committee) showed that even though least-developed countries (LDC), and upper-middle

¹ The first SAICM reporting process covered 2009–2010 (PR1) and the second report covered 2011–2013 (PR2).

income countries (UM) reported a positive growth under the majority of the objectives since the first progress report (2009-2010), very little improvements for the lower-middle income (LM) countries was recorded under the Objectives B on knowledge and information and E on illegal international traffic. The mixed results make it difficult to draw a conclusion on the advancements of DAC countries as compared to non-DAC countries in regard to chemical management. Given that only three reports from each of LM and LDC groups were submitted to PR3, the results might not be applicable to all the countries in the group and therefore not demonstrative of the true status of the group.

10. Overall, the greatest progress since the first progress report in 2009-2010 seemed to have been made under Objective B on knowledge and information and Objective E on illegal international traffic for nearly all the regions. Furthermore, the progress toward Objective A since PR1 was significantly large for all the regions except for the AFR region; between 16 to 26 per cent growth. By merely looking at the average scores of the objectives, it might seem that the AFR region has had slower progress since PR1 as compared to the rest of the regions. However, this data on its stand-alone format is misleading knowing that the available data was submitted by only three respondents (all government stakeholders) from the AFR region. Thus, a solid comparison with previous reports is unfair if not impossible. Nevertheless, the AFR respondents showed a positive progress of 9, 10 and 12 per cent under Objective B, D and E, respectively, since PR1.
11. Nevertheless, each region has strengths in certain area more than the others. The uneven implementation of the five objectives points out to the priorities set by the countries in implementing the Strategic Approach. The greatest level of activity reported for the AFR region was under indicator 14 on identification and prioritization of capacity-building needs. The ASP region stood highest under indicator 3 on hazardous waste management arrangements. The CEE region showed a similar strength under both indicators of 6 and 9. The LAC region performed similarly well under indicators 3 and indicator 9 on websites to provide information to stakeholders. Finally, the WEOG region also reported the highest level of activity under indicator 9.
12. Thirty per cent of the indicators had below-average progress. Indicators 12, 15, 16 and 13 showed an overall decline in the level of activity across regions when compared with the average scores obtained in PR1. The largest decline of 26 per cent in the activity level belonged to indicator 12. The activity in indicator 12 was modified to inquire the significant changes made to the international instruments in this reporting period rather than the number of countries with mechanisms to implement these instruments. As a result, a small number of respondents reported on this activity.
13. Notably, indicators 13, 15, and 16 were the concern of a few to none of the projects funded by the Quick Start Programme trust fund (QSP trust fund) and Global Environment Facility (GEF) both of which support the countries building the capacity they need for the sound management of chemicals and waste. Throughout 14 rounds, 171 projects were approved and funded by QSP trust fund out of which only two projects involved indicator 15 and none addressed indicator 16. Similarly, the projects approved by GEF only in two instances covered indicator 15 and none of the indicator 13 and 16 in the period 2014-2016. Further, more substantial work on the aforementioned indicators is perhaps the most obvious room for improvement for the countries to possibly consider in the future reporting periods.
14. No progress in the level of activity was recorded for the two indicators of 11 and 14 once the average scores under these indicators were compared with the average scores in PR1. The reason could

majorly be associated with the modifications to the re-phrasing of the activities in the questionnaire. The Indicator 11 on the multi-stakeholder coordinating mechanism was split to two-part activity on the organizations (not the governments) who have multi-stakeholders or multi-sectoral committees and the types of these stakeholders (i.e. Academia, civil society, industry, etc.) which seemed to have negatively influenced the responses because a majority did not respond to this activity. Indicator 14 suffered from a low level of activity as compared to previous progress reports mainly due to the significantly small pool of data in PR3 submitted by recipient countries (n=28 out of 65) which this indicator is enquiring in PR3.

1. INTRODUCTION

15. This progress report (PR3) presents the results of the third SAICM reporting process with the data covering the period 2014-2016. The report provides a comparison of the results of the SAICM online questionnaire tool with the two previous reports; 2009-2010 progress report (PR1) and 2011-2013 progress report (PR2). It also makes a general comparison with the baseline report (2006-2008), under the relevant indicators² to draw a more comprehensive picture of the progress.
16. The results of the report are presented with regional comparisons similar to previous report (i.e. PR2). Additionally, the report discusses the significance and effects of international financial and technical assistance by SAICM's Quick Start Programme trust fund (QSP trust fund) and Global Environment Facility (GEF) in achieving progress under each objective.
17. The report is structured in four sections; (a) Introduction, (b) Progress Results (c) Analysis of 20 Indicators (d) Discussion and Conclusions
 - a) The introduction provides details on the background, objectives, methodology and data analysis
 - b) The results section is presented in four sections: a) the first part reviews the responses to the questionnaire and the distribution of the responses across the regions b) the second part provides a closer analysis and discussion of the data obtained from the SAICM questionnaire and the progress under each of the 20 indicators of progress. The discussion makes a thorough comparison with the results from the previous progress reports. The data on eight indicators of Inter-Organization Programme for the Sound Management of Chemicals (IOMC) is discussed where there was an interlinkage with the SAICM indicators of progress. The IOMC data is used to complement or cross-reference the SAICM questionnaire results where it was applicable. c) the third part gives a global overview of the progress and achievements across all regions, economic groupings. d) the last part of the results section presents the number of countries with approved projects by Global Environment Facility on sound management of chemicals and wastes on a global and regional scale. It also links the projects onto the SAICM indicators of progress for the period 2014-2016.
 - c) The section on analysis of indicators provides an in-depth analysis of the SAICM indicators, the progress achieved using the indicators, the pros and cons in using them, and their

² The baseline report (2006-2008) presented a baseline for seven of the 20 adopted indicators.

connection with eleven basic elements based on the overall orientation and guidance document³.

- d) The discussion and conclusions section provide the summary of the achievements toward the sound management of the chemicals in particular in regional level by comparing the progress against indicators with the baseline report, exploring and discussing the interlinkages with the IOMC indicators. In the attempt to do so, it also identifies the challenges and the existing gaps. It also seeks to provide resolutions and considerations for the upcoming questionnaire and reports, the thorough analysis of 20 indicators and their usefulness for the governments, and international and national chemical management agencies.

1.1. Data Collection and Analysis

18. The data on SAICM strategic objectives and the 20 indicators of progress was extracted and analyzed from the online questionnaire which had been made available to the SAICM stakeholders as a reporting tool similar to the previous report (PR2). The questionnaire has been updated since the previous progress report; with the order of indicators under Objective A and D rearranged (Please see Appendix 2), the activities under the indicators 12, 13 and 15 rephrased, and several new activities were added under the indicators 1, 2, 3, 5, 9, 11 and 14 (Please see Appendix 4).
19. The online questionnaire for the 2014-2016 reporting period was open from 16 June to 15 September 2017. The secretariat extended the period until 31 October 2017. Following this and on the basis of guidance from the Bureau of the fifth session of the International Conference on Chemicals Management (ICCM5 Bureau), at its fourth meeting in Rome 7-8 November 2017, the secretariat extended that period until 1 December 2017. The SAICM regional focal points played a role in encouraging all SAICM stakeholders to complete the online questionnaire.
20. The questionnaire consisted of two sections of the general information and contact information sections and then five sections each covering one of the five Overarching Policy Strategy categories agreed by ICCM2 (Please see Annex 2 for the complete list of indicators). Certain questions in the questionnaire are modified and several new questions were added to this reporting period.
21. Two scoring methodology were used in order to quantitatively analyze the responses provided by the stakeholders. This method was identical to the methodology developed in PR2. The first metric was the per centage of total respondents who selected a certain activity. The second metric assigned a point to the answer provided to every activity selected by each respondent. The point system is similar to the one from PR2 where a completed activity received one point, an activity in progress or under development received 0.5 point, and no reported activity received zero point (including responses such as 'Not applicable', 'Not known', etc.). The average per centage of all possible activities selected in each question has been expanded by calculating individual respondents' per centage and aggregating these 'scores' for questions, the indicators and the objectives. The score is presented as a per centage of the total possible activities and expressed as a number between 0 and 1. Each SAICM region obtained a score, between 0 and 1, under each of 20 indicators and the five objectives therefore a comparison of the scores with those of previous reports (PR2, PR1) was made possible.

³ Overall Orientation and Guidance document for achieving the 2020 goal of sound management of chemicals

22. In order to contribute to tracking future progress of SAICM, at ICCM4⁴, paragraph 39 of section IV on the progress and challenges towards the achievement of the 2020 goal of sound chemicals management, the IOMC proposed a set of quantitative indicators from verifiable sources and for which global data are available. On the IOMC website⁵ indicator data is displayed in the map form wherever possible to provide quick access to the country or region of interest. For this current progress report, data for the eight IOMC indicators (identified as Indicators A to H hereinafter) has been provided to harmonize as much as possible with the presentation of the 20 SAICM indicators.
23. The data collected on the eight indicators of IOMC are as follows: Indicator A on number of countries with National Profiles (UNITAR); Indicator B on number of countries with a Pollutant Release and Transfer Register (PRTR) (UNITAR); Indicator C on number of countries with poison centres (WHO); Indicator D on number of countries with control for lead in decorative paint (WHO and UNEP); Indicator E on countries which have implemented pesticide legislation based on the International Code of Conduct on Pesticide Management of the Food and Agriculture Organization of the United Nations (FAO) and WHO; Indicator F on number of countries that have achieved core capacities for chemicals under the International health Regulations (WHO); Indicator G on number of parties to the Basel, Rotterdam, Stockholm and Minamata conventions (UNEP); Indicator H on implementation of the Global Harmonized System of Classification and Labelling of Chemicals (GHS) (UNECE and UNITAR).

2. PROGRESS RESULTS

2.1. Online Questionnaire Responses: SAICM Stakeholders

24. Submitted reports via SAICM online questionnaire were received from the 35 Governments of Argentina, Austria, Barbados, Belarus, Bosnia Herzegovina, Bulgaria, Canada, Colombia, Costa Rica, Cote d'Ivoire, Denmark, Finland, Germany, Guyana, Honduras, Italy, Japan, Lesotho, Madagascar, Malaysia, Monaco, Montenegro, Netherlands, Peru, Russian Federation, Serbia, Republic of Korea, Spain, Sweden, Switzerland, Thailand, the Former Yugoslav Republic of Macedonia, Trinidad Tobago, United Arab Emirates, and Yemen. The report of the European Union (EU) and its 28 member States has been submitted in written form by Estonia which held the Presidency of the Council of the European Union during this reporting period. The EU report brought the total government responses analyzed for this report to 54. Two EU member States of Belgium and France submitted additional reports in the written form to complement the EU report. The reports submitted by some of the individual EU member States via SAICM online questionnaire (i.e. Austria, Bulgaria, Denmark, Finland, Germany, Italy, Netherlands, Spain, Sweden), as well as the written reports by Belgium and France were considered as an additional data to the common report submitted by EU. A further nine governments registered for the reporting tool but did not complete their submissions and thus were not included in the analysis.
25. Five Intergovernmental Organizations, OECD, UNDP, UNEP, UNITAR and WHO submitted their full progress reports via the online questionnaire. Four civil society non-governmental organizations

⁴ SAICM/ICCM.4/15

⁵ http://www.who.int/iomc/indicators_saicm/en/

(NGOs), Armenian Women for Health and Healthy Environment (AWHHE), Central American Institute for Studies on Toxic Substances, International POPs Elimination Network (IPEN), Pesticide Action Network (PAN); 2 private sector bodies, American Petroleum Institute (API) and International Council of Chemical Associations (ICCA); and 1 civil society, Society for Ecological Restoration (SER) submitted their progress reports.

26. This is an overall response rate of almost 28 per cent of the current 193 government member States of UN General Assembly. That shows a reduction of 15 per cent of government participation from PR2. Of the total government responses to PR3, 47 had also submitted responses to PR2: that is, seven governments responded to PR3 which had not submitted a report to PR2. Thirty-six of the PR2 government respondents did not respond this time around (Figure 1). Seventy per cent of the respondents who did not submit responses in PR3 were from AFR region, 67 per cent from ASP, and 43 per cent from LAC regions (Figure 2).

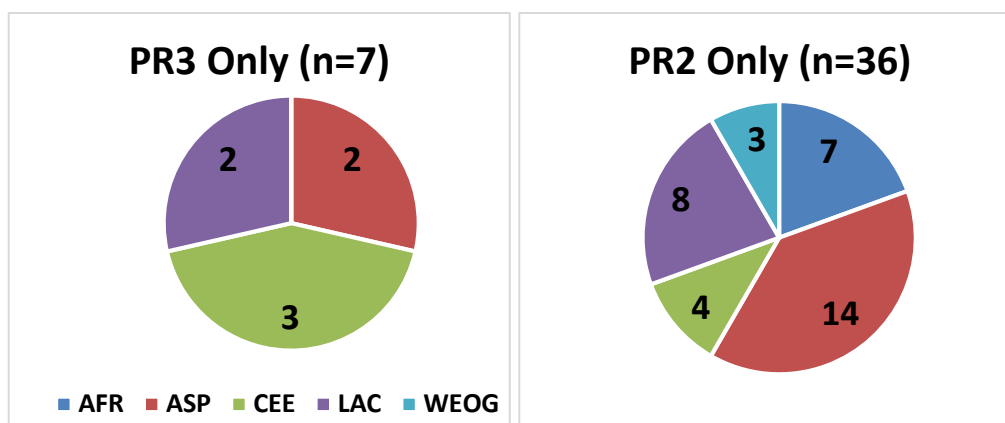


Figure 1 Regional distribution of the respondents to only PR2 and to only PR3

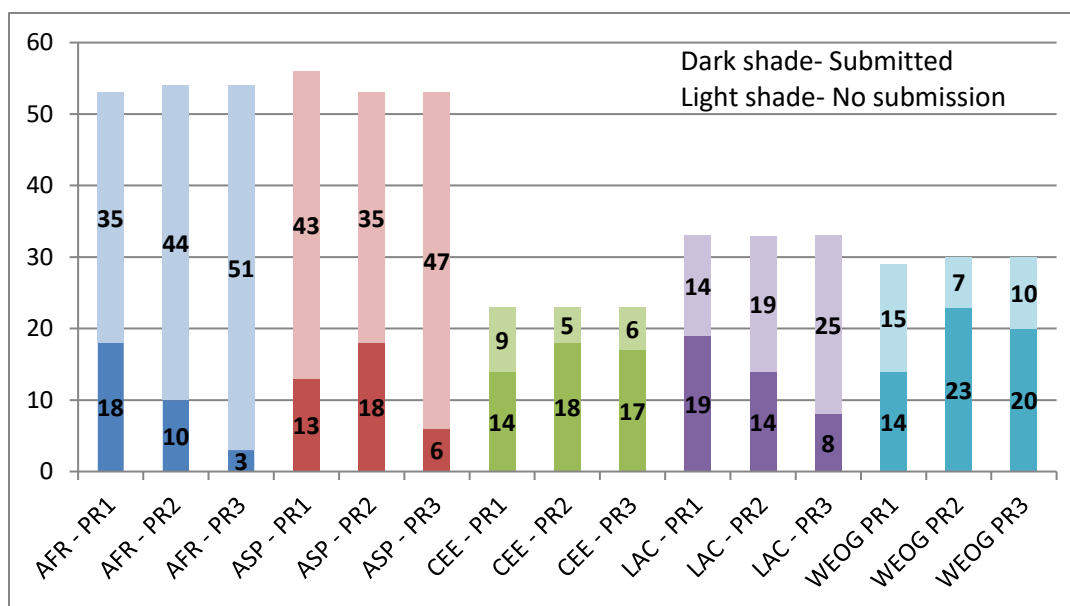


Figure 2 Number of total governments submitting (dark shading) and not submitting (light shading) a progress report in each UN regional group in PR3, PR2 and PR1.

27. The response rates of all the regions have unfortunately decreased since PR2 (Figure 2). However, CEE and WEOG were highly represented in the PR3 progress report. The CEE region contributed to 31 per cent of PR3 but accounts for 12 per cent of countries, and WEOG contributed to 37 per cent of the PR3 sample but accounts for 16 per cent of all countries (Figure 3). The AFR region was significantly under-represented in PR3 which made up six per cent of the PR3 sample but 28 per cent of all countries.

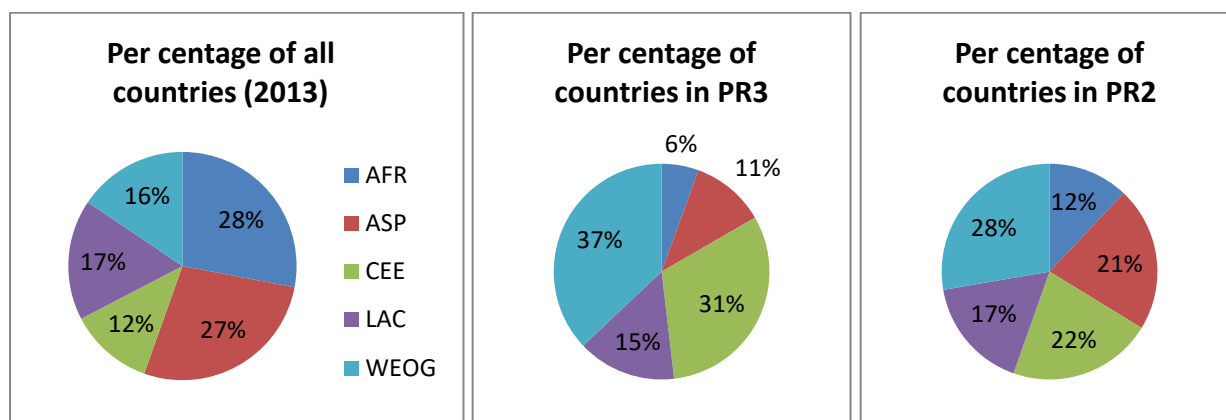


Figure 3 Regional breakdown of countries in the progress report (all countries split by region, PR3 (n=54) and PR2 respondents by region (n=83), governments only)

2.2. Results of the Online Questionnaire by Strategic Objective

All respondents, except where stated otherwise, n=65

2.2.1. Objective A Risk Reduction

Indicator 1 Mechanisms to address key categories of chemicals

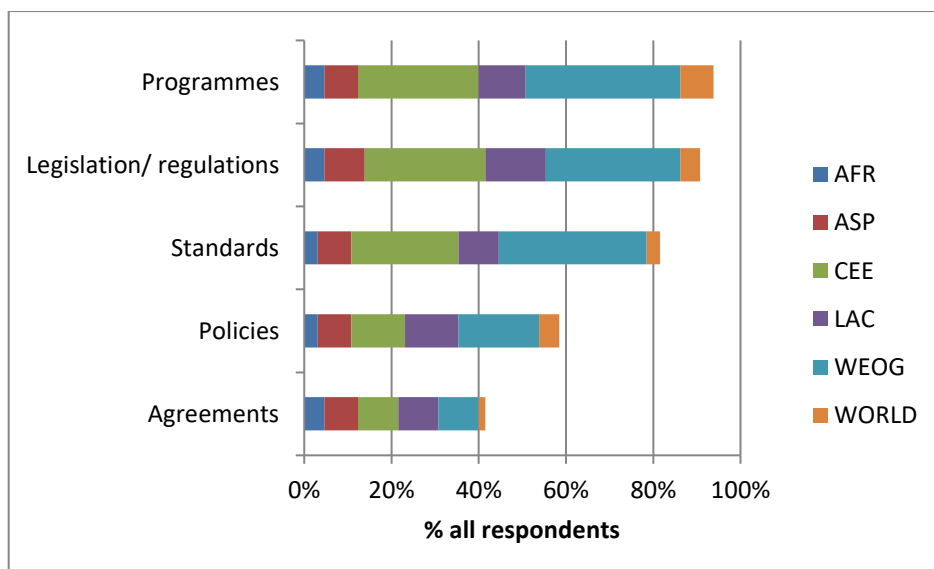


Figure 4 Per cent of respondents with a mechanism in place to address key categories of chemicals

28. Indicator 1 reports on the countries and organizations that have mechanisms to address key categories of chemicals (Figures 4, 5). Figure 4 shows the per cent of the respondents who selected the five categories of mechanisms to reduce risks associated with chemicals. A majority of the respondents indicated that they have at least three mechanisms in place; 'programmes' (94 per cent), 'legislation or regulation' (91 per cent) and 'standards' (82 per cent). The high response rate makes this indicator one of the most commonly reported activities among all the objectives.
29. The AFR showed a great level of activity by selecting three out of five mechanisms (programmes, legislation and agreements) by 100 per cent of the respondents. The other two categories of 'standards' and 'agreements' have been selected by 67 per cent of the AFR respondents (Figure 4). In addition, 83 per cent of the respondents in the ASP region reported on all the five categories of the mechanisms in place; with 'legislation' being selected by all the ASP respondents. The CEE region prioritized 'programmes', 'legislation' and 'policy' with 100 per cent response rate for the first two and 83 per cent response rate for the third. The favorite mechanism was indeed 'legislation' with 83 per cent of WEOG respondents and all the respondents from AFR, ASP, CEE, and LAC having selected this activity.
30. In response to a new activity added to the indicator 1, 92 per cent of all the respondents noted that they have programmes in place to respectively encourage the mechanisms (e.g. education and training) identified above. Fifty-eight per cent of the respondents also used other methods such as the organization of educational sessions for the public. Eighty-six per cent of all the respondents use some type of enforcement programme (e.g. inspection, sampling/testing) to ensure compliance with the mechanisms in place. All the country respondents in the regions of LAC, CEE and ASP selected both encouragement and enforcement programmes to address the key categories of chemicals. Only three governments did not provide a response to this activity.
31. Figure 5 shows the number of countries (organizations) with mechanisms to address key categories of chemicals. The response rates to all the categories of chemicals in PR3 were between 14 to 92 per cent, whereas this range was 43 to 90 per cent in PR2. One government respondent and one industry respondent did not select any of the categories and another two countries selected only two out of 12 categories of the chemicals. Pesticides, mercury or mercury-containing sources and Persistent Organic Pollutants (POPs) were selected by 92, 92 and 91 per cent of the respondents respectively. These values were equally 90 per cent for POPs and pesticides and 85 per cent for mercury in PR2.

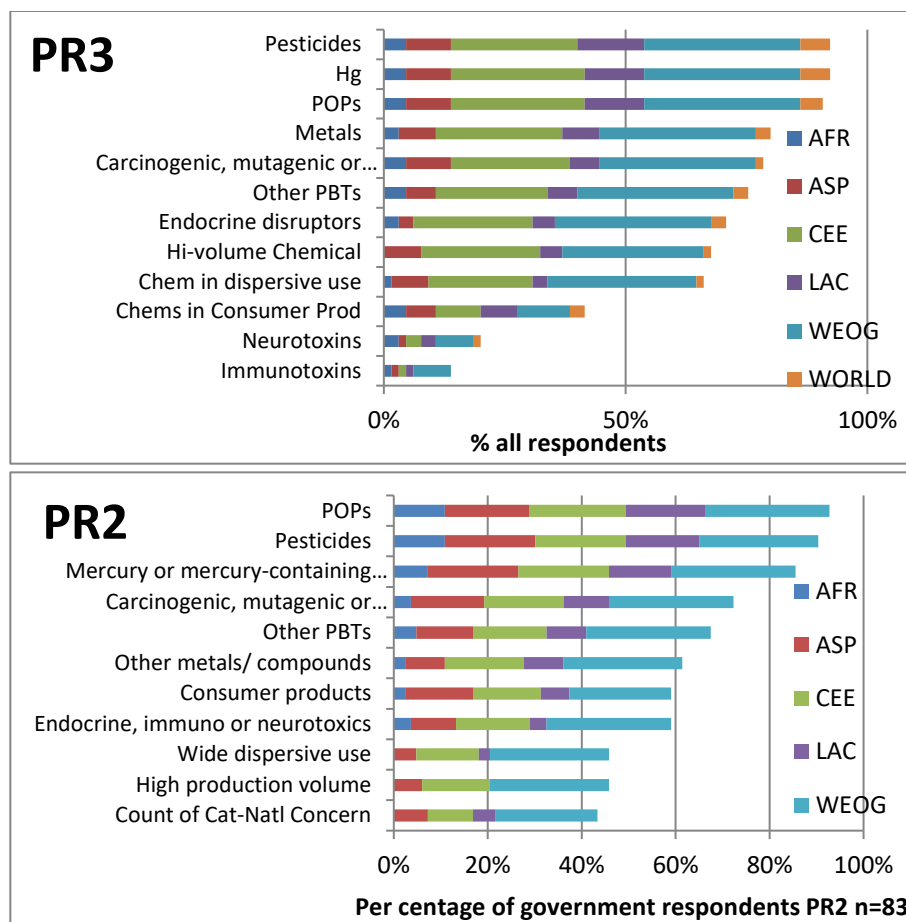


Figure 5 Per cent of respondents (n=65) with mechanisms to address key categories of chemicals

32. As it can also be seen in figure 5, among all the categories of key chemicals, pesticides, mercury and POPs received the highest response rate. The high activity could be attributed to the fact that pesticides, mercury and POPs, are addressed in the legally binding conventions. Eight out of 15 functional projects funded by QSP trust fund in the period 2014-2016 focused on indicator 1. Furthermore, a large number of projects approved and funded in the period 2014-2016 by the Global Environment Facility (GEF) pledged to address the sound management of these three categories of chemicals (i.e. POPs, pesticide, and mercury) as it is discussed in the section 2.4.
33. IPEN⁶ reported on the International Mercury Enabling Activities Program⁷, launched in 2014, which supported NGOs in 29 countries to promote treaty ratification and awareness-raising on mercury pollution. In addition, IPEN produced Mercury Treaty Guidance documents, which have been translated into several languages to help NGOs and government delegates apply the Minamata Convention on Mercury to their national situations.⁸

⁶ [IPEN's Citizens' Report 2012 – 2015](#)

⁷ [IMEAP](#)

⁸ [An NGO Introduction to Mercury Pollution and the Minamata Convention on Mercury](#) and [Guidance on the Identification Management and Remediation of Mercury-Contaminated Sites](#)

34. The least commonly selected categories of chemicals were immunotoxins, neurotoxins, and the chemicals in consumer products with 14, 20 and 42 per cent response rate, respectively. This in particular highlights the room for more tangible work in regard to immunotoxins, neurotoxins and the chemicals in products.
35. The level of activities in regard to heavy metals reached 80 per cent response rate by governments since PR2. Six out of ten non-governmental respondents selected activities concerning the heavy metals, out of which three were NGOs, one industry, and two were IGOs.
36. Endocrine-disrupting chemicals (EDCs) was selected by 71 per cent or 46 of the respondents in PR3; slightly smaller than 49 respondents who selected this activity in PR2. According to IPEN's report, the Endocrine Society and IPEN developed the EDC Guide which was published in 2014⁹. The guide draws from each organization's strengths to present a more comprehensive picture of global EDC exposures and health risks as well as knowledge of global policies and perspectives from developing and transition countries.
37. Overall, this indicator was among the most commonly reported activities by all the respondents with an above-average progress by all the regions. Eight out of 15 QSP trust fund projects in the period 2014-2016 addressed this indicator.

⁹ [Introduction to Endocrine Disrupting Chemicals \(EDCs\)](#)

Indicator 2 Hazardous waste management arrangements

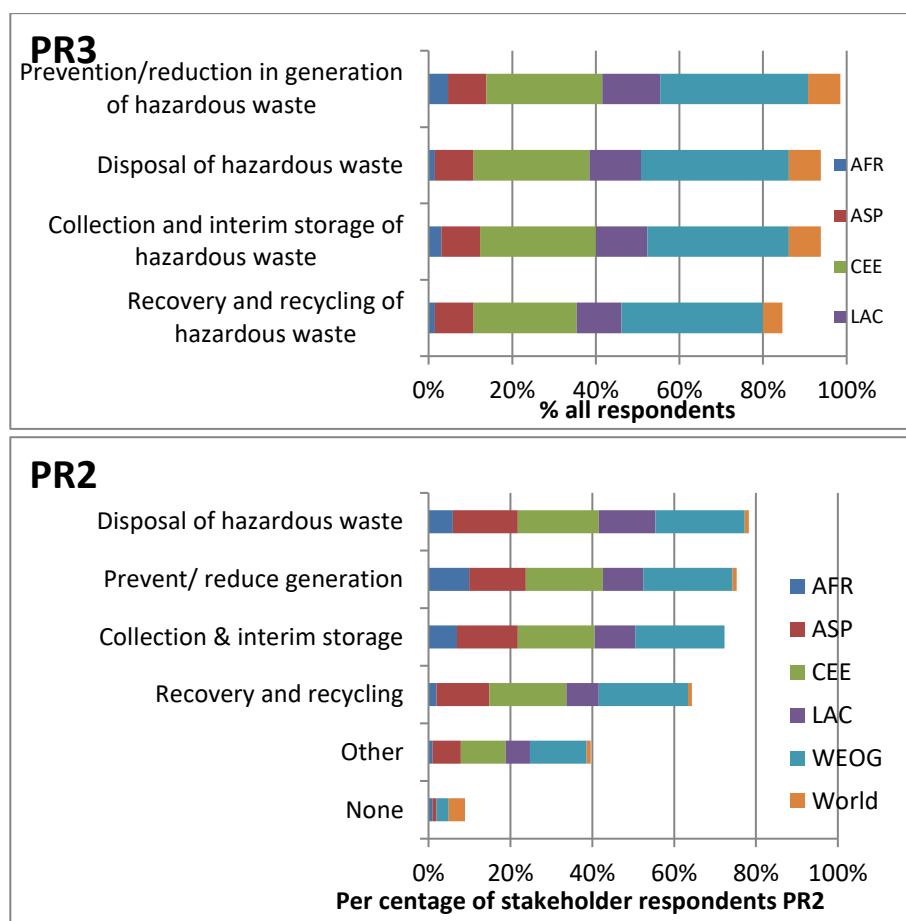


Figure 6 Per cent of all respondents controlling different stages of the hazardous waste cycle

38. Indicator 2 addresses the progress of the countries (organizations) in regard to hazardous waste management arrangements (Figures 6, 7). More than 90 per cent of all the respondents addressed the top three stages of the hazardous waste management (Figure 6). The number of respondents addressing the activity in 'recovery and recycling of waste' has remained similar to PR2. The 'prevention or reduction in generation of hazardous waste' received the largest attention with 98 per cent response rate or 61 responses versus 64 total responses in PR2. The improvement in the level of activities was similarly recorded for the other three stages of managing hazardous waste. One of the respondents selected none of the stages of waste management. Another 16 per cent of governments selected 'other' methods of addressing hazardous waste which is considerably smaller than reported value in PR2 as can be seen in figure 6.
39. Given the small size of the AFR respondents, all the governments noted that they have the arrangements for 'the prevention or reduction in generation of waste'. All the respondents in the ASP, CEE and LAC regions (100 per cent) also selected 'the prevention of hazardous waste'. Only one out of three AFR countries selected 'recovery and recycling of hazardous waste' and 'disposal of hazardous waste'.

40. A new activity added to the questionnaire tried to measure the progress of the stakeholders in regard to the waste management cycles in the period of 2014-2016. Between 78 to 83 per cent of the respondents indicated that they have either introduced, revised or were developing mechanisms to address any of the identified cycles in this reporting period. This rate pointed to the rising attention given to the issue of the hazardous waste. Notably, 21 projects out of 31 GEF approved projects in the period 2014-2016 addressed the hazardous waste containing chemicals, in particular POPs and the reduction of the risk associated with them.

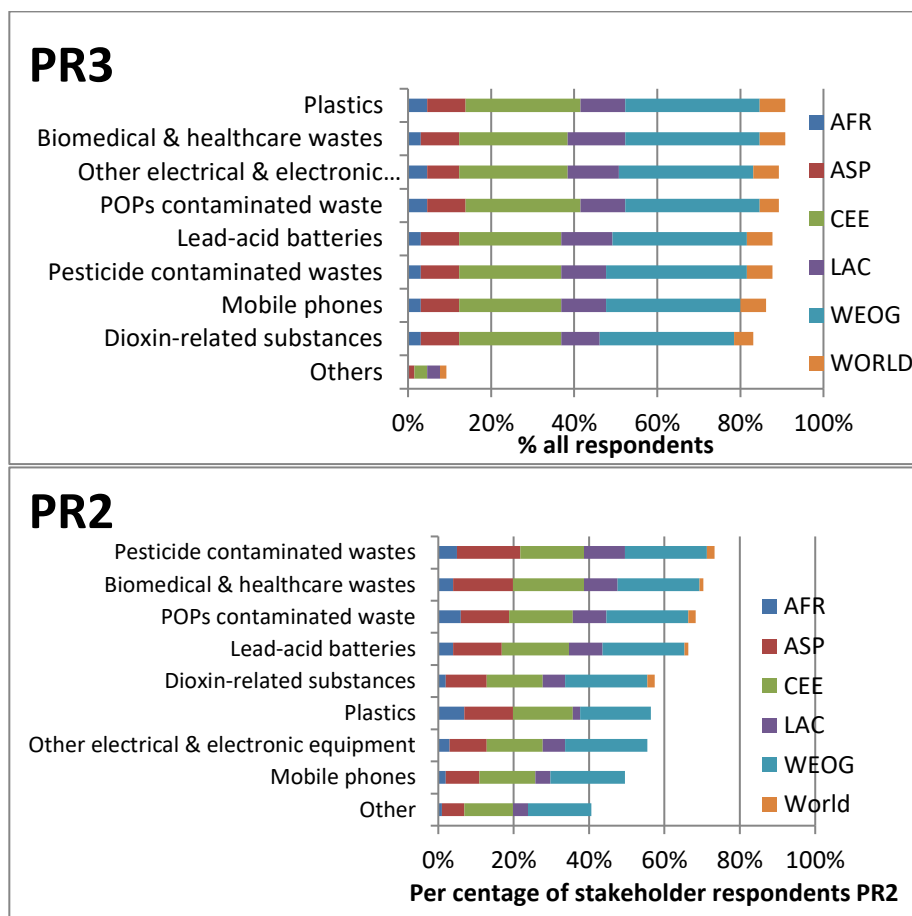


Figure 7 Per cent of all respondents addressing specific waste streams through legislation or permits

41. The per cent of respondents addressing specific waste streams through legislation or permits is shown in figure 7. The response rate in PR3 was about 88 per cent on average for all of the categories of waste streams. The majority of the respondents selected 'plastics' while in PR2 'pesticides' received the highest activity. Eighty-eight per cent of the respondents addressed pesticides and 91 per cent selected the plastics in PR3. The number of respondents who addressed plastics was slightly larger (i.e. 59 respondents) as compared to PR2 (i.e. 57 respondents). There has been increasing international attention to address the plastic waste in recent years and this can explain the relative growth in reported activities on plastics in waste streams in PR3 even though the total number of respondents was significantly smaller than the previous progress reports. The response rate to

address plastics reached 100 per cent of the responding countries in the AFR, ASP and CEE regions and it was 78, and 88 per cent for the LAC, and WEOG regions.

42. The difference in proportions among the specific waste streams was considerably small and it has subsequently decreased since PR2. This showed that the waste streams of 'dioxins', 'electronic and mobile waste' which were not receiving adequate attention in previous reports have seen much increase in the level of activity in PR3. In particular, two out of three AFR respondents indicated the development of mechanisms to address mobiles, electronics, pesticides and POPs waste in this reporting period. IPEN reported on launching, in 2016, a series of pilot projects across Africa, Asia, Latin America and Central and Eastern Europe on the SAICM Emerging Policy Issue including the highly hazardous pesticides, chemicals in products and hazardous substances in the life cycle of electronic products. Outcomes of these project were realized in 2017.
43. Indicator 2 similar to indicator 1 was among the indicators with high reported activity. One project funded by QSP trust fund focused on this indicator in this reporting period. The average score of 0.84 acquired for this indicator points at the major advancement made by majority of the respondents.

Indicator 3 Mechanisms for setting priorities for risk reduction

44. Indicator 3 addresses the mechanisms for setting priorities for risk reduction associated with the chemicals (Figures 8- 10). The progress on accounting for chemicals through a science-based assessment to set priorities for risk reduction is shown in figure 8A.
45. The risks associated with 'pesticides' were indicated as the most common risk among all the four categories of chemicals (i.e. Pesticides, industrial chemicals, biocides and food additives) with 88 per cent response rate or 57 respondents as compared to 77 per cent (i.e. 78 respondents) in PR2. The response rates to the other three categories of chemicals were 82 per cent for 'industrial chemicals', and 74 per cent for both 'biocides' and 'food additives'. The AFR region reported the smallest progress since PR2 with only one country out of three having science-based assessment for only 'pesticides' and 'industrial chemicals'. The largest progress for science-based assessment of pesticides belonged to the ASP, LAC and CEE respondents with 100 per cent response rate for the first two and 94 per cent for the later in this reporting period.
46. In a separate sub-activity, the status of prioritization process by the stakeholders for a set of exposure risks was requested (Figure 8B). The 'Environmental risks' have been identified by 94 per cent (i.e. 61 respondents) of the respondents as the most common exposure risk whereas this activity was selected by 65 per cent of the respondents (i.e. 66 respondents) in PR2 (Figure 8). In addition, the other two exposure risks, 'consumer or public health' and 'occupational health', stood after 'Environmental risks' with equally 91 per cent response rate.

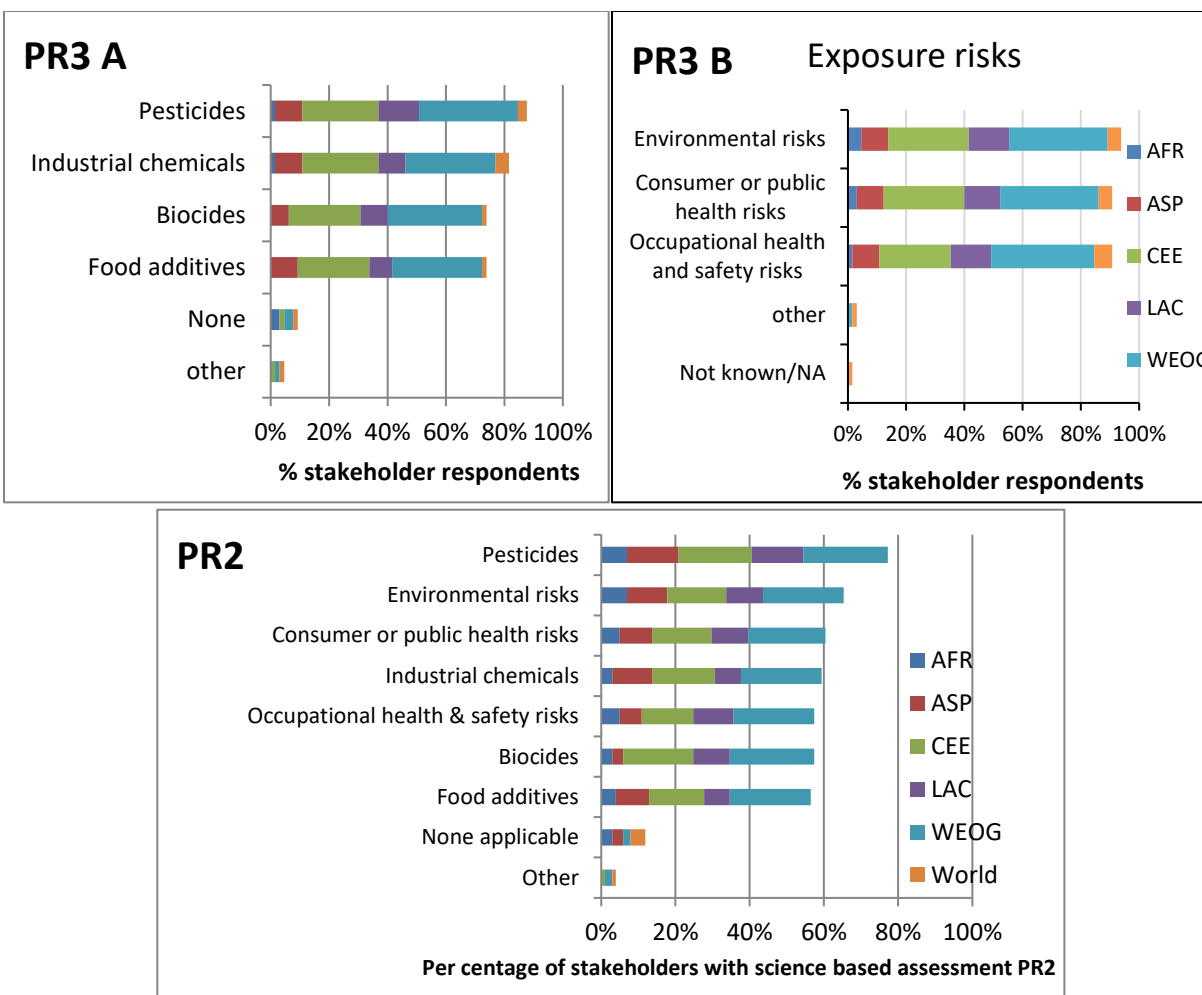


Figure 8 Per cent of respondents with science-based assessment in PR3 and PR2; (A) for different chemicals in PR3 (B) with prioritization process for the exposure risks in PR3

47. In a newly added activity, between 8 and 18 per cent of the respondents indicated that their science-based assessment of the categories of chemicals specified above, in figure 8, was pre-market (i.e. new chemicals only). Whereas, more than 60 per cent of respondents selected both pre- and post-market (i.e. existing chemicals) assessment for the chemicals. This data suggested that a majority of countries do not conduct a science base assessment of chemical before they appear in the markets and a significant number of countries (i.e. 14-31 per cent of respondents depending on the type of chemical) were uncertain of the existence of this mechanism which both emphasized the room for a better coordination in this area.

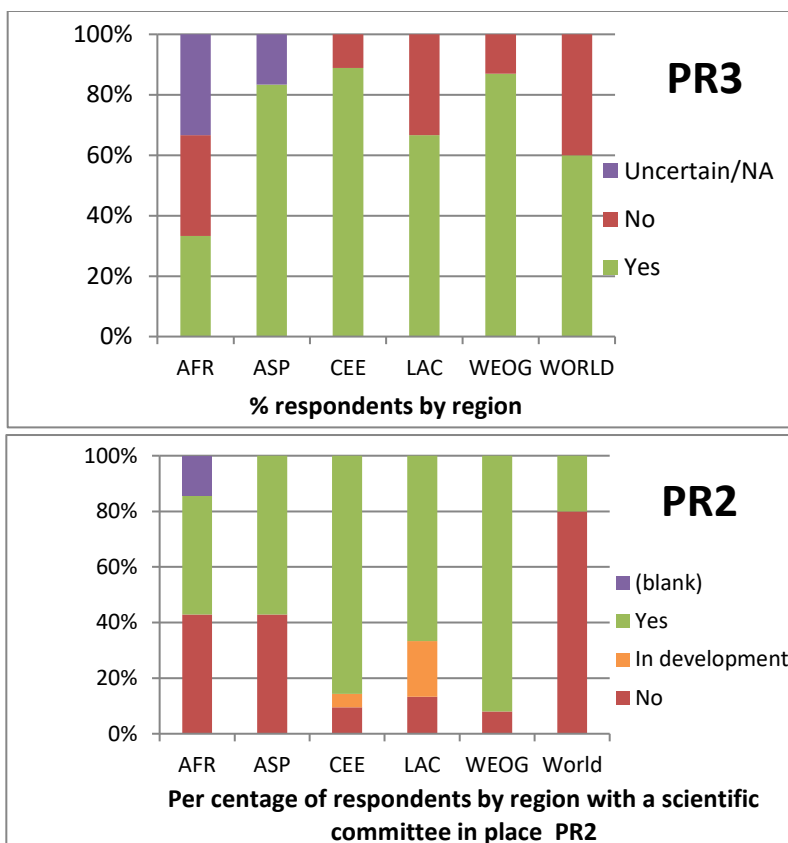


Figure 9 Per cent of respondents within region with a scientific committee

48. The proportion of respondents with a scientific committee in place to assess risks was 78 per cent in PR3 (i.e. 51 respondents) whereas it was 69 per cent in PR2 (i.e. 70 respondents) (Figure 9). Five respondents in the ASP region indicated the presence of scientific committees whereas this value was 12 respondents in PR2. Six respondents from the LAC region had the scientific committees versus 10 respondents in PR2. The number of scientific committees in the WEOG region was relatively close in PR3 with 20 respondents to PR2 with 23 respondents. Similarly, for the CEE region, 16 respondents indicated having a scientific committee in PR3 versus 18 respondents in PR2. One out of three AFR respondents (33 per cent) reported the presence of a scientific committee which has decreased from 6 responses received in PR2. It is notable that the response rate of the AFR region to this activity had also decreased in PR2 as compared to PR1. It could be suggested that the continuous fall in the number of submitted reports from the majority of the regions, in particular the AFR region, since PR1 might have contributed to the low level of activity.
49. Figure 10 shows the per cent of respondents having risk management programmes for risks associated with the categories of chemicals. The three most commonly selected categories were 'air pollutants', 'chemicals in drinking water' and 'pesticides' with 86, 83, 83 per cent response rate respectively. On average, 81 per cent of the stakeholders selected all the categories of chemicals. The largest level of the activities in the AFR region was under 'chemicals in recreational water' and 'chemicals in drinking water' with 100 per cent response rate. Three countries in the LAC region were developing programmes for 'Industrial chemicals', 'pesticides', 'biocides' and 'chemicals in food'. Moreover,

another three countries in the LAC region were developing new programmes for 'chemicals in products', 'chemicals in recreational' and 'chemicals in groundwater'.

50. Overall, the level of activity for this indicator was above-average except for the AFR region reporting a below-average activity. Two approved QSP trust fund projects, one in the AFR region (i.e. Ghana) and one in the CEE region (i.e. Albania, Bosnia and Herzegovina, and the former Yugoslav Republic of Macedonia), sought to address this indicator.

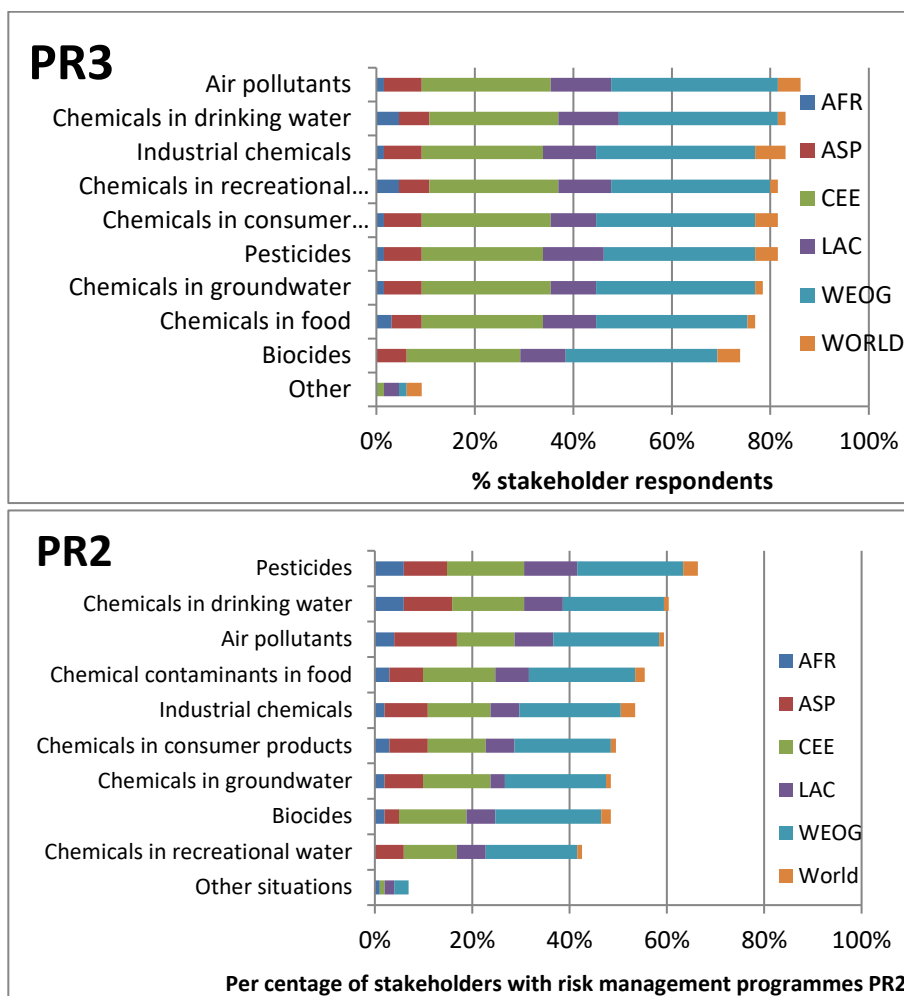


Figure 10 Per cent of respondents having risk management programmes for priority risks

Indicator 4 Use of chemicals management tools

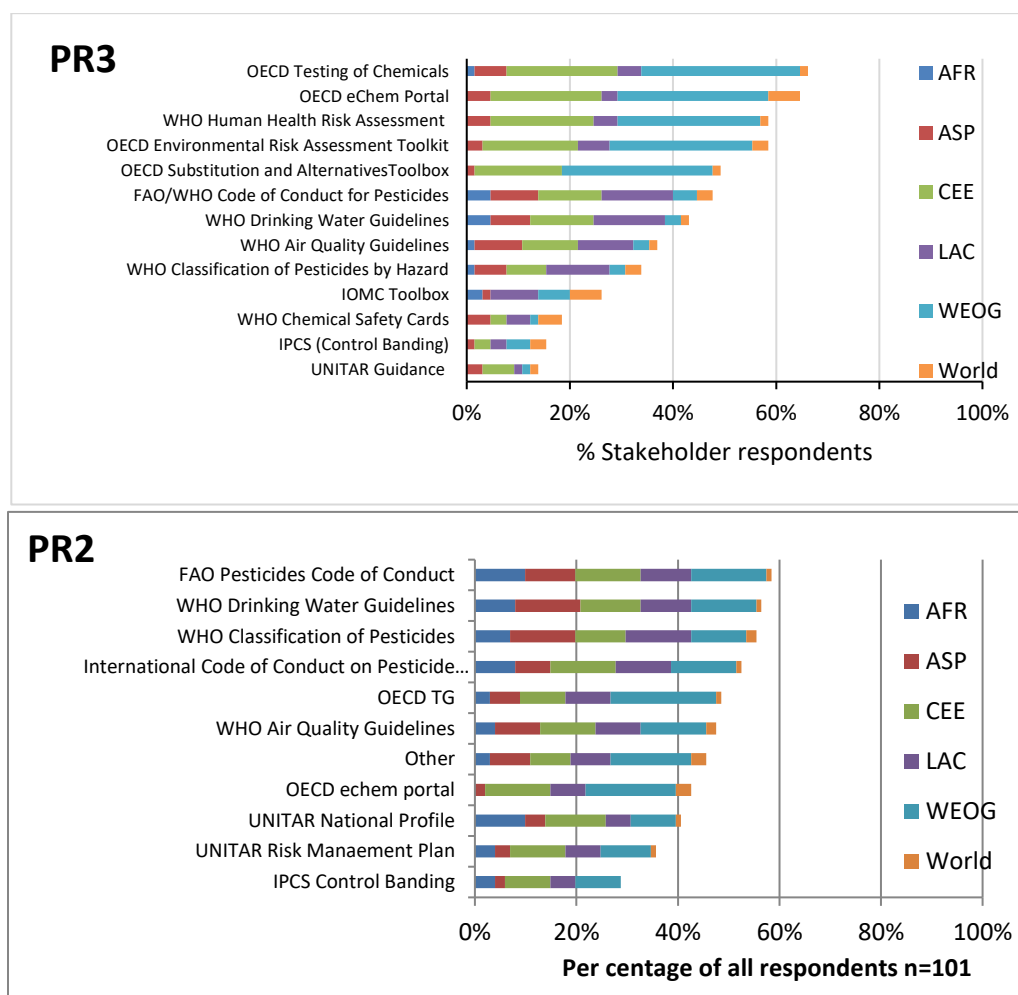


Figure 11 Per cent of all respondents utilizing IOMC tools

51. Indicator 4 addresses the per cent of respondents implementing the IOMC tools or the self-published tools by the countries (organizations) to address chemicals management (Figures 11, 12, 14). There have been five new additions to the IOMC tools in PR3 including OECD Substitution and Alternatives Toolbox, WHO Chemical Safety Cards, WHO Human Health Risk Assessment, OECD Environmental Risk Assessment Toolkit and IOMC Toolbox (Figure 11). Moreover, UNITAR National Profile were removed from the list of IOMC tools in PR3.
52. The IOMC tools play an important role in facilitating the sound management of chemicals. The use of IPCS International Chemical Control Toolkit and UNITAR Guidance on Developing a Risk Management Plan for Priority Chemicals were particularly selected by a small number of respondents; 10 respondents selected IPCS International Chemical Control Toolkit in PR3 versus 29 respondents in PR2. The number of respondents who selected UNITAR guidance was 9 in PR3 whereas this value was 36 in PR2.

53. The newly added tools including IOMC Toolbox, OECD Environmental Risk Assessment Toolkit, WHO Human Health Risk Assessment and WHO Chemical Safety Cards were selected by 26, 58, 58, and 18 per cent of the respondents respectively.
54. The top two selected tools by the respondents in PR3 were OECD guidelines for testing of chemicals, and OECD eChem portal whereas the top two in PR2 were FAO pesticides Code of Conduct and WHO drinking water guidelines. The highly represented regions of WEOG and CEE could be one reason for the high selection rate of OECD tools in this progress report. The majority of WEOG, and CEE respondents used the OECD guidelines for testing of chemicals and OECD e-Chem portal which otherwise were selected relatively less by other regions. Excluding the responses from the EU member States, the most popular tools among other stakeholders remained to be the same as PR2.
55. It is notable that the WEOG region showed much smaller activity in the use of the tools by WHO/FAO Code of Conduct on Pesticides Management in PR3 as compared to PR2. For the AFR, ASP, and LAC regions, they relied heavily on the two top tools similar to PR2, being WHO/FAO Code of Conduct on Pesticides Management and WHO Drinking Water Guidelines. WHO Chemical Safety Cards, UNITAR guidance on developing a risk management plan and IPCS International Chemical Control Toolkit presented a very low rate of adoption by the least developed countries.

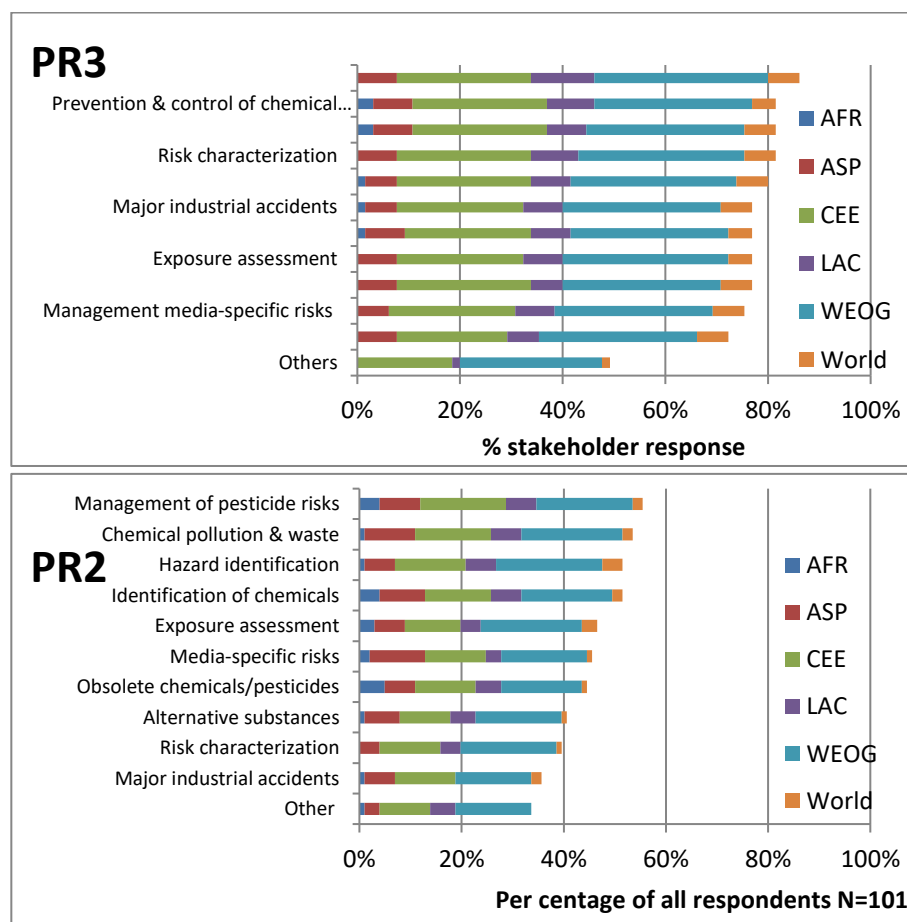


Figure 12 Per cent of government respondents publishing their own tools on specific chemical risk management issues

35. At least 79 per cent of the SAICM stakeholders had published one or more tools on the identified chemical risk management issues (Figure 12). The top five areas, 'hazard identification', 'prevention and control of chemical pollution and waste', 'management pesticide risks', 'risk characterization', and 'less hazardous alternative substances' were selected by more than 80 per cent of the stakeholders. 'Hazard identification' stood on the top of the list with 86 per cent response rate (i.e. 56 respondents) in PR3, up from 51 per cent response rate (i.e. 52 respondents) in PR2. Whereas, in PR2, the development of tools on the pesticides risks was selected by the largest number of the respondents (i.e. 55 per cent response rate). The 'management of pesticides risks', 'prevention and control of chemical pollution and waste' received almost similar number of responses in PR3 as compared to PR2. The 'risk characterization' received per cent more responses in PR3 (i.e. 53 respondents) versus 40 respondents in PR2. The 'hazard identification' received 56 responses in PR3 versus 52 responses in PR2.
36. The AFR region selected the least number of tools under all the chemical management issues, even slightly less than the level of activity in PR2. Two out of three AFR countries selected publishing their own tools on the 'management of pesticides risks' and 'prevention and control of chemical pollution and waste' in PR3.
37. IPEN has developed a set of tools and strategies that ensure accurate and consistent messages from country to country and that make it easy for national NGO partners to engage with partners to prepare and release their own national lead paint reports and communicate with target audiences. These tools include: media and report templates; technical information on the hazards of lead paint; the availability of good paint ingredient substitutes and a general outline on how to apply them in a reformulation process; comparisons with the lead content of paints in other countries; strategies for working with paint companies and associations; and potential recommendations to national governments, paint companies, consumers, and stakeholder groups. Furthermore, IPEN has developed a relatively inexpensive methodology for sampling and analyzing paints, and for reporting results that any reasonably competent national partner (even one with minimal technical expertise) can easily implement.
38. The option of 'Pollutant Release and Transfer Registers (PRTR)' was newly added to the list in PR3 and notably was selected by 72 per cent of all the stakeholders; that was 42 out of 54 government respondents or 78 per cent response rate.
39. Indicator B of IOMC indicators of progress addresses countries with a Pollutant Release and Transfer Registers (Figure 13). In the period 2014-2016 alone, a total of five governments, two in the CEE region, one in each of the ASP, LAC, and WEOG regions, established a PRTR. The majority of the PRTRs are located in the WEOG region (24 PRTRs) and next in the CEE region with 15 PRTRs. Only 3 ASP governments have established a PRTR and no country in the AFR region has one, while these two regions represent 55 per cent of the member States combined. The data marks the large gap across regions in the number of PRTRs and the room for work in this area.
40. Forty-two government respondents to SAICM questionnaire had a PRTR which is in a good agreement with the data collected by the International PRTR Coordinating Group (provided by the United Nations Institute for Training and Research (UNITAR)); 49 countries in 2016, up from 39 countries in 2010.

41. A closer look at the regional breakdown of the responses to this activity showed that 5 governments in the ASP region noted to have published their tool or guidance materials on Pollutant Release and Transfers. This number did not correspond to the IOMC data which was 3 countries as of 2016 in the ASP region. It could be explained that rather than having a comprehensive PRTR tool, these governments have published some guidance materials on the topic. Nevertheless, a cross-referencing is needed to confirm the differences between the two sets of data.

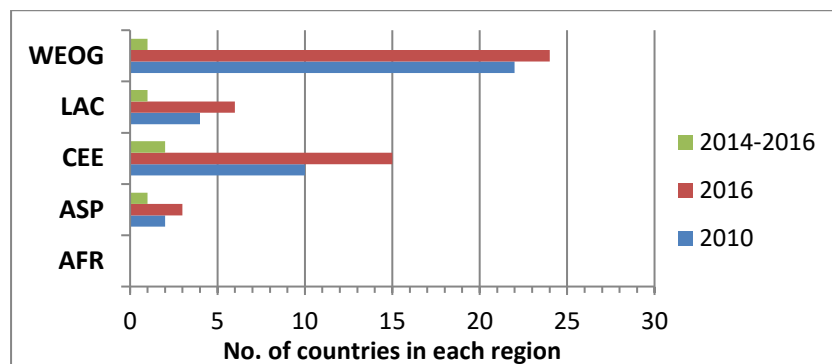


Figure 13 IOMC Indicator B Number of countries with a PRTR in 2010, 2016 and in the period 2014-2016 (UNITAR)

42. Figure 14 shows the government respondents selecting options in regard to pesticides under the indicators 1 (key categories of chemicals- Pesticides), 2 (Waste streams- Pesticides), 3 (Scientific committee- Pesticides and risk management programmes-Pesticides), 4 (FAO/WHO Code of Conduct on Pesticide Management, WHO classification of pesticides, International Code of Conduct on pesticides, publication of tools and guidance on pesticides risks and management of obsolete chemical and pesticides) and 6 (GHS classification of pesticides). The activities concerning the pesticides usually received a high level of response rate as it can be seen in figure 14; more than 77 per cent of the respondents in PR3 reported activities on the pesticides under all the indicators except for WHO tool of classification of pesticides under indicator 4.

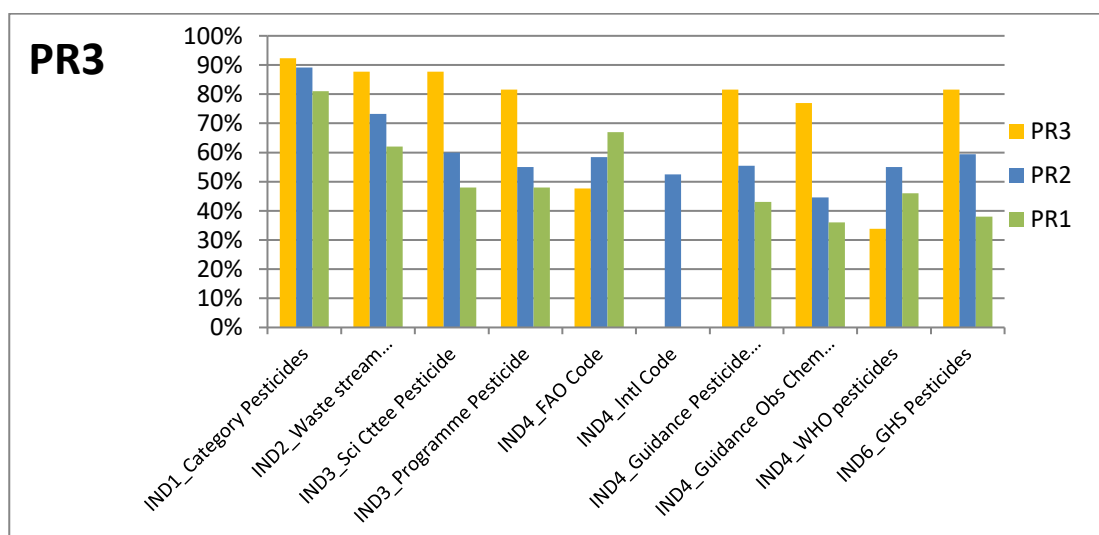


Figure 14 Per cent of government respondents selecting pesticide options under indicators 1, 2, 3, 4 and 6 in PR3, PR2 and PR1.

43. There has been consistent increase in activity as compared to PR1 and PR2 in case of most of the indicators on pesticides. Except that, in this reporting period, the WHO classification of pesticides and FAO Code of Conduct on Pesticide Management both under indicator 4 indicated a decline, with 34 and 48 per cent response rate; down from 55 and 58 per cent response rate in PR2, respectively.

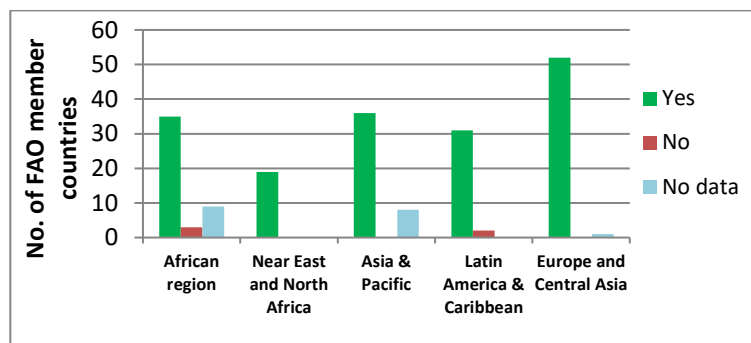


Figure 15 IOMC Indicator E Number of FAO member countries with pesticide legislation based on the FAO/WHO International Code of Conduct on Pesticide Management (FAO)

44. Indicator E of IOMC addresses the FAO member countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct (Figure 15). Indicator E is interlinked with Indicator 4 of SAICM indicators of progress on the tools or guidance materials for risk reduction of chemicals by IOMC, including the FAO/WHO International Code of Conduct on Pesticide Management. The presented data in figure 15 shows the status of member state countries under each FAO region¹⁰ as of 2017 collected through a global questionnaire filled by the member States¹¹. Eighty-nine per cent (174 countries) have implemented pesticide legislation, whereas 3 per cent of the States have not, and another 9 per cent provided no response. A regional breakdown showed that all the 19 FAO member countries in Near East and North Africa region have implemented legislation.
45. Forty-eight per cent of all the respondents to SAICM questionnaire reported that they used FAO/WHO Code of Conduct as a tool or guidance material for pesticides. The majority of FAO member States have implemented the pesticide legislation and a closer look at the States that have not in both questionnaires (i.e. SAICM and FAO) made the comparison more meaningful. The majority of EU member States did not select this activity in SAICM questionnaire. Whereas, according to the FAO data, the EU member countries had the pesticide legislation based on FAO/WHO Code of Conduct in place. This difference in data pointed out at the slight difference in the way each indicator enquired about FAO/WHO Code of Conduct; indicator 4 of SAICM questionnaire asked whether the stakeholders use FAO/WHO Code of Conduct as a tool or guidance material for risk reduction, and indicator E of IOMC collected the data on countries who have implemented the Code of Conduct as the legislation.

¹⁰ The number of countries in FAO regional breakdown: Africa 47, Near East and North Africa 19, Asia and Pacific 44, Latin America and Caribbean 33, Europe and Central Asia 53 countries.

¹¹ No data before 2017 is available for the FAO/WHO International Code of Conduct on Pesticide Management (formerly the International Code of Conduct on the Distribution and Use of Pesticides)

46. With slightly above-average level of activity reported by the respondents, the indicator 4 of SAICM indicators of progress has shown an overall positive growth of 20 per cent since PR1; with ASP and CEE regions performing better than the average in this regard and the AFR region with a below-average progress.

Indicator 5 Monitoring activities for selected environmental and health priorities

47. Indicator 5 of SAICM indicators of progress follows the progress of the monitoring activities for selected environmental and health priorities (Figure 16- 18). A large number of respondents, 92 per cent, selected the 'environmental monitoring; in PR3 as it is shown in figure 16. All the respondents from CEE and LAC regions also selected the 'environmental monitoring'. 'Monitoring of food and drinking water' were newly added to PR3 and yet were largely selected, with 85 per cent of response rate. 'Monitoring of the chemicals' related incidents was selected by 80 per cent of the stakeholders. Thus, it remained very close to the 'monitoring of human poisoning', the 'human biomonitoring', and the 'occupationally-related diseases' with 80, 77 and 77 per cent response rates respectively.

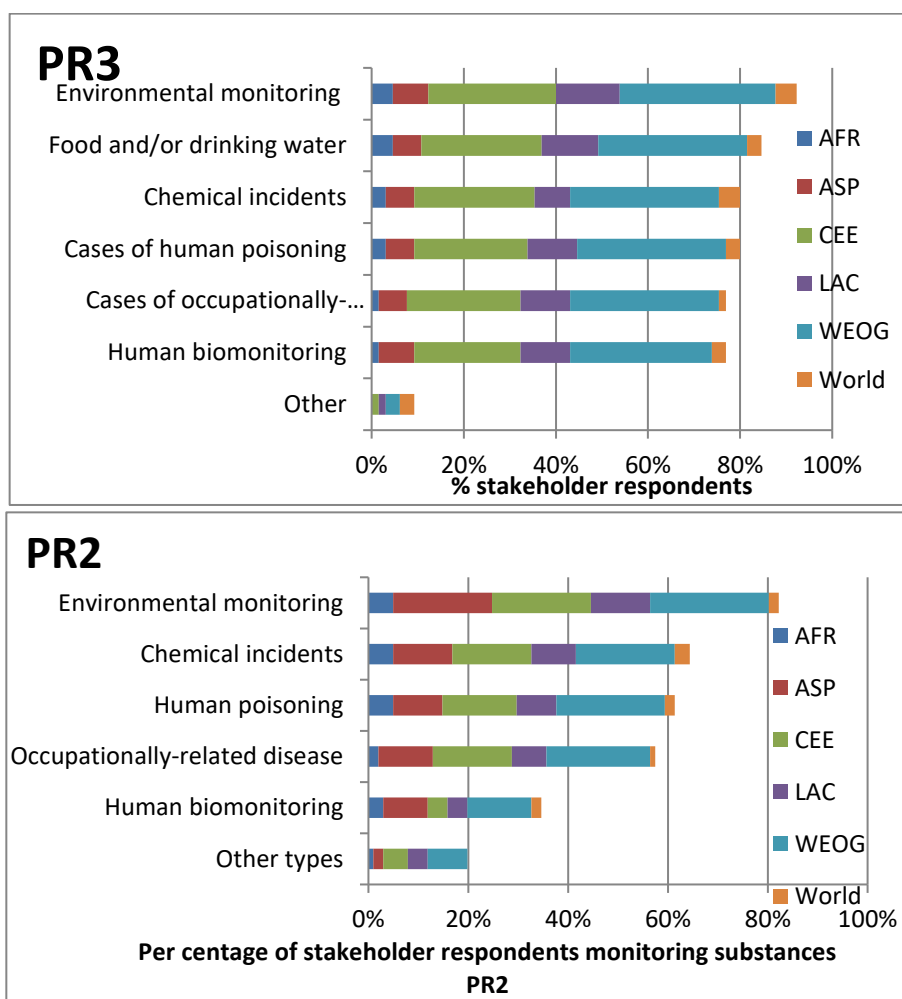


Figure 16 Per cent of all respondents monitoring chemical substances

48. 'Monitoring of chemical incidents' which is covered under legally binding Rotterdam convention reached 80 per cent in response rate (i.e. 52 respondents), versus 64 per cent response rate or 65 respondents in PR2. The proportions of responses within the regions varied considerably. Two out of three AFR respondents selected 'monitoring chemical incidents'. The ASP, LAC, WEOG, and CEE stakeholders selected this activity at a rate of 67, 78, 88 and 89 per cent in this reporting period, versus 57, 60, 80 and 76 per cent response rate in PR2.
49. All the three respondents from the AFR region reported to perform 'environmental monitoring', and 'monitoring of food and drinking water'.
50. IPEN's report discussed the monitoring of the toxic substances in plastic children's products purchased in Armenia, Belarus, Czech Republic, Hungary, Serbia, China, focusing on polybromodiphenyl ethers (PBDEs) and new, alternative brominated flame retardants (nBFRs). Their report¹² indicated high levels of toxics chemicals in several of the plastic products, noting no information was provided by the producers regarding the substances in the product.
51. The environment sector was selected by 95 per cent of the respondents as the most common sector involved in monitoring activities (Figure 17). The health sector stood second with 89 per cent response rate. The labour, agriculture and industry sectors were selected by 83, 83, and 80 per cent of all stakeholders to be the next common sectors involved in the monitoring activities.

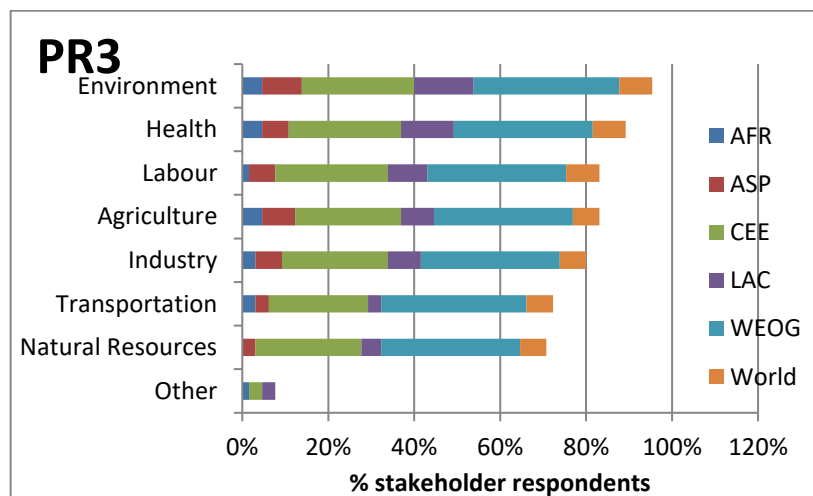


Figure 17 Per cent of all respondents indicating the sectors involved in monitoring activities

52. In a newly added activity to PR3, significant changes or new developments in the monitoring activities in the reporting period of 2014-2016 were questioned (Figure 18). A response rate of 18 per cent for 'monitoring of the cases of occupationally-related disease' and 77 per cent of all the stakeholders for 'monitoring of the environment' was registered in answer to this new activity. Majority of these respondents indicated that they have made significant changes to the environmental monitoring programmes over this reporting period, while the rest indicated to be in the process of making the new developments. The CEE, WEOG, and LAC regions reported the largest

¹² [Toxic Toy or Toxic Waste: Recycling POPs into New Products](#)

number of new developments and changes to their environmental monitoring programmes with 89, 83, and 78 per cent regional response rate, respectively.

53. Overall, a positive growth of 24 per cent was recorded for the indicator five since PR1. The performance under this indicator was overall above-average across all the regions. The AFR region reported a below-average level of activity, WEOG and CEE had the largest level of activity, and finally ASP and LAC stood slightly above average.

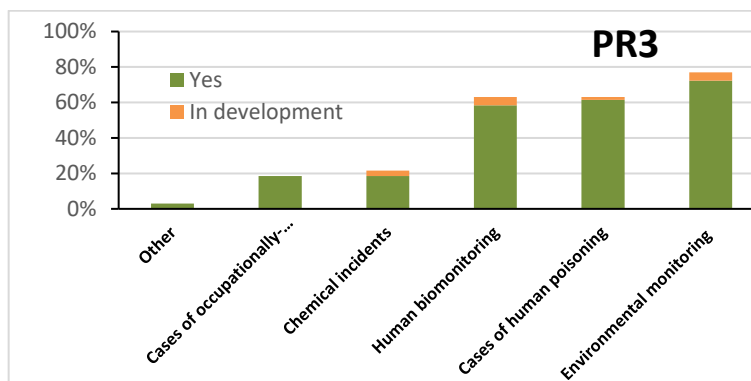


Figure 18 Number of SAICM respondents having made significant changes or new developments in their monitoring activities in this reporting period (2014-2016).

2.2.2 Objective B Knowledge and Information

Indicator 6 Provision of information in accordance with internationally harmonized standards

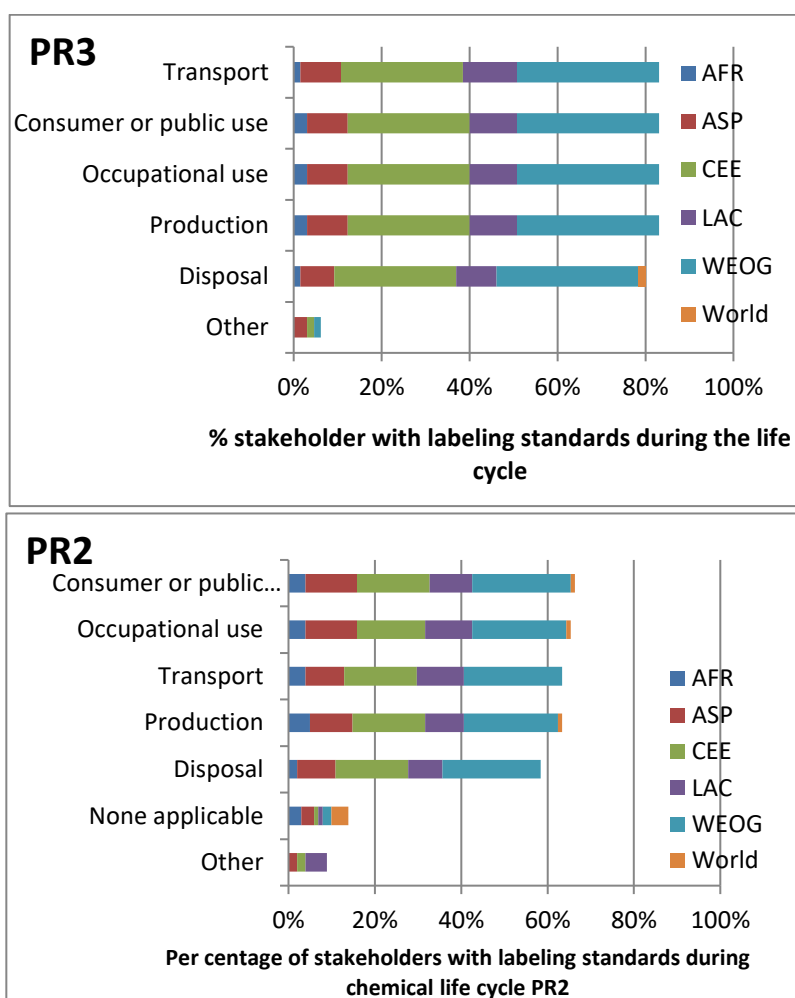


Figure 19 Per cent of respondents with labeling standards during chemical life cycle

54. Indicator 6 of SAICM reports on the number of countries (and organizations) providing information according to internationally harmonized standards (Figure 19-22). Figure 19 demonstrates the number of stakeholders with labeling standards during the chemical life cycle. The proportions of the responses among the five categories identified in this activity in PR3 were very similar; falling between 80 to 83 per cent response rate. The 'transport', 'consumer use', 'occupational use', and 'production cycles' were selected by 83 per cent of the respondents; versus 66 per cent response rate in PR2. The 'disposal cycle' was selected by 80 per cent of respondents which was slightly behind the rest of the categories. The response rates indicated that as the new countries adopted labeling standards, they were comprehensive in covering all the stages of chemical life cycle.
55. The GHS is a key component of SAICM implementation, featuring in the basic elements of the overall orientation and guidance: "Collection and systems for the transparent sharing of relevant data and information among all relevant stakeholders using a life cycle approach, such as the implementation

of the Globally Harmonized System of Classification and Labelling of Chemicals". Furthermore, it features prominently in the SAICM overarching policy strategy and the global plan of action. Indicator H of IOMC also addresses the number of countries with full or partial implementation of GHS (Figure 23).

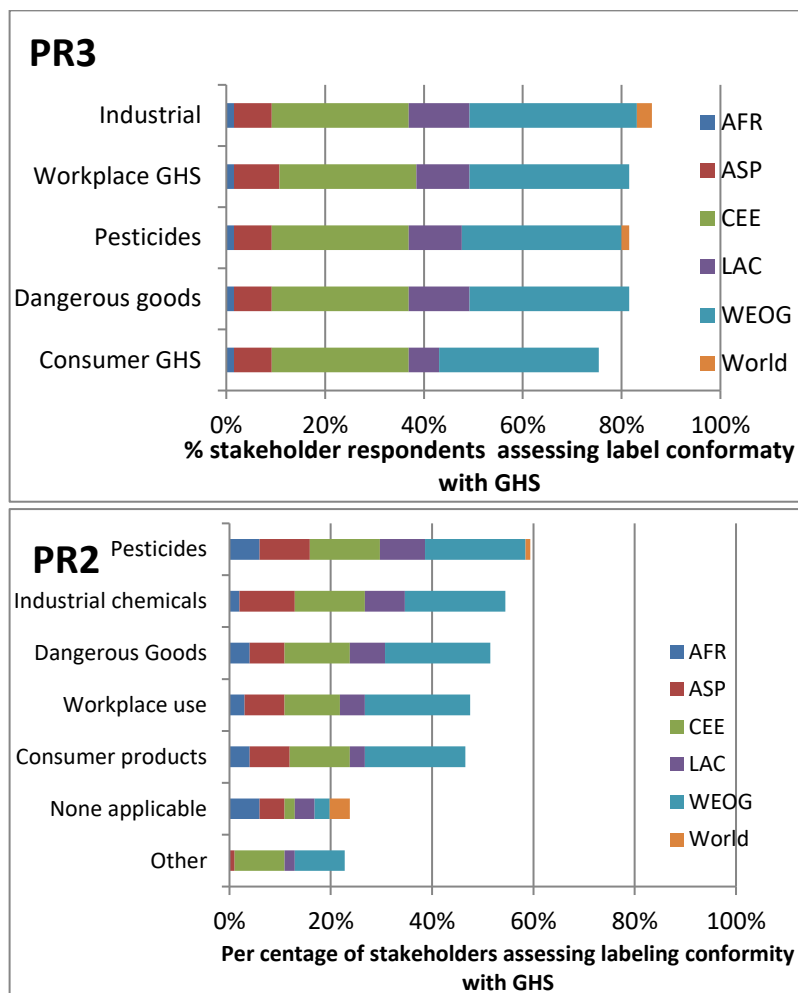


Figure 20 Per cent of respondents assessing labeling conformity with GHS

56. The per cent of SAICM stakeholders selecting labeling conformity with GHS for the key categories of chemicals is shown in figure 20. Eighty-six per cent of the respondents reported conformity with GHS for 'industrial chemicals', versus 59 and 38 per cent in PR2 and PR1, respectively. The proportions of responses among various categories of chemicals were similar. The 'pesticides', 'chemicals in workplace use' and 'dangerous goods' were equally selected by 82 per cent of all the respondents. The 'chemicals in consumer products' received relatively lower level of activity (75 per cent response rate) as compared to PR2 (i.e. 66 per cent response rate). The SAICM baseline report estimated the number of countries complying with GHS to be 65 in the period 2006-2008. The baseline report noted that however this number included different levels of conformity (partial conformity) as many of the activities addressed implementation of GHS for a specific category such as pesticides, workplace or occupational health and safety risks.

57. By looking at the regional breakdown of the responses, the regions gave different prioritization to different categories of chemicals (Figure 21). The LAC region gave the least priority to the chemicals in consumer products and the highest priority to dangerous good and industrial chemicals. The ASP region put the workplace chemicals first. The largest progress belonged to the CEE region where all the respondents indicated conformity with GHS under the specified categories of chemicals. Only 33 per cent of the AFR respondents (i.e. one out of three countries) indicated conformity with GHS under all the categories of chemicals. All the ASP respondents indicated conformity with GHS under workplace chemicals, whereas all the rest of chemicals were selected by 83 per cent of ASP stakeholders.

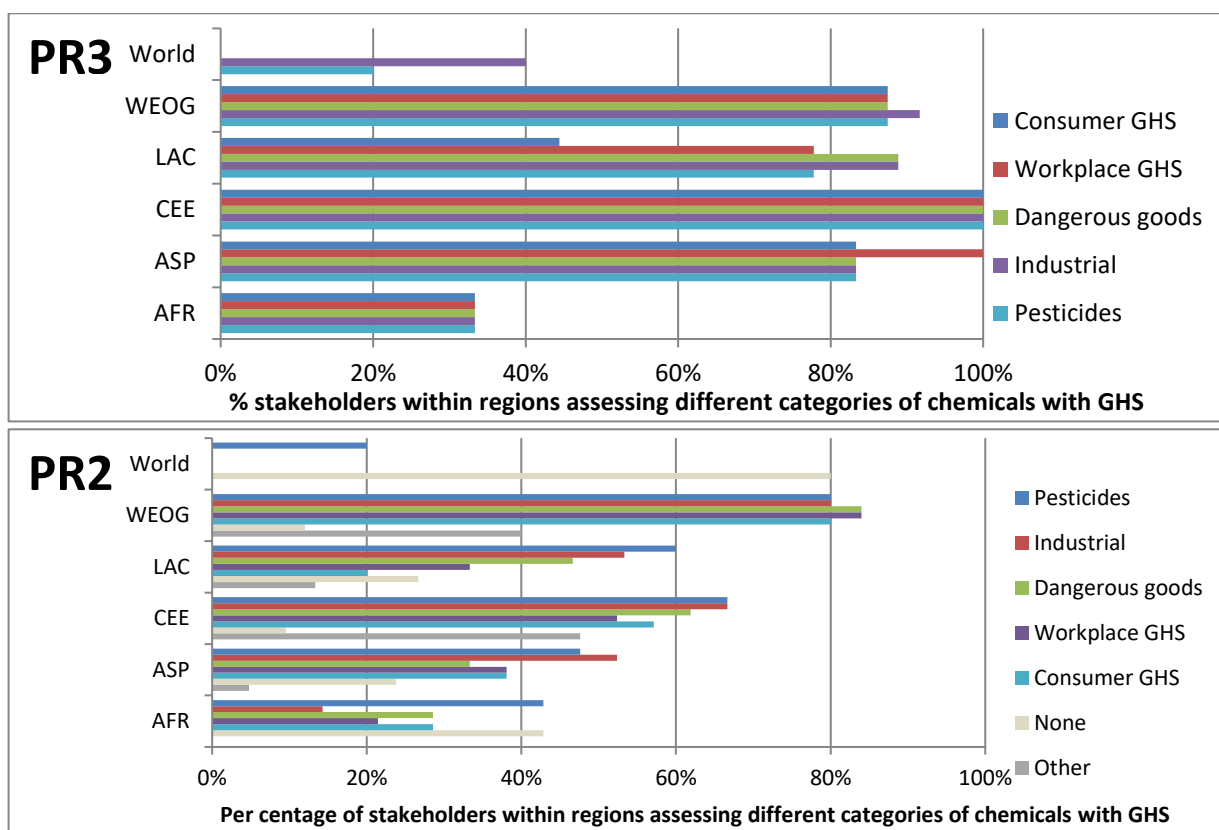


Figure 21 Per cent of respondents within regions assessing different categories of chemicals with GHS

58. The categories of chemicals (i.e. chemicals in the workplace and consumer products) in two labeling schemes, GHS and other harmonized labeling schemes, are compared in each region in figure 22. All the CEE respondents indicated conformity with GHS labeling standards for both workplace and consumer good that was a noteworthy for this region. All the ASP respondents reported to have conformed with workplace GHS and some being slightly behind with consumer GHS (83 per cent response rate). The LAC and AFR regions were behind the other regions concerning the implementation of consumer GHS with 44 and 33 per cent response rate. The AFR countries reported their activities (i.e. 67 per cent response rate or 2 respondents out of 3) toward labeling chemicals in both the consumer products and at the workplace, but the growth seemed less in harmony with the GHS standards.

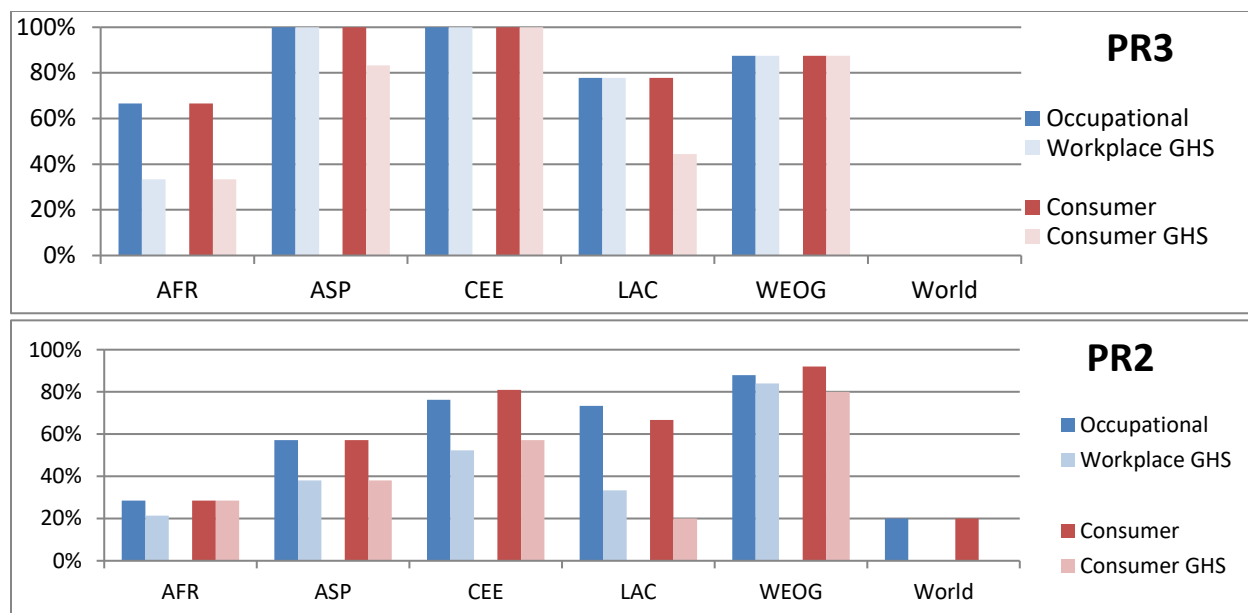


Figure 22 Per cent of respondents by region implementing GHS (light shading) and all harmonized labeling schemes

59. The Indicator H of IOMC tracks the number of countries with full or partial implementation of GHS (Figure 23). UNITAR has been integrally involved in capacity building on the GHS for several years, notably as part of the World Summit on Sustainable Development Global Partnership for Capacity Building to Implement the GHS. In April 2002, UNITAR and ILO, in collaboration with the OECD, initiated the Global Partnership. Since that time, UNITAR has continued its training and capacity building programme on the GHS, under the partnership.
60. In addition to these IOMC Participating Organizations, the UN Economic Commission for Europe (UNECE) provides the secretariat to the ECOSOC (Economic and Social Council) Sub-Committee of Experts on the GHS, which is a policy body acting as the custodian of the GHS. UNECE participates in the Inter-Agency Meetings on Sound Chemicals Management and Wastes, which also includes all of the IOMC Participating Organizations.
61. As the GHS is not part of a convention, protocol or other form of legally-binding instrument, it does not have a mechanism whereby countries notify their ratification, or report on their compliance. It is a tool that is available to countries, should they wish to adopt it. This makes UNECE the recipient of information on implementation of the GHS; this information may or may not be provided by countries. Not only is it the case that UNECE may or may not receive such information, but there are also additional complexities as to defining “implementation”.
62. The GHS, as a tool for countries, is intentionally flexible. The “building block approach” is integrated into the GHS, meaning that any country or competent authority can adopt the hazard classes and/or categories that it decides to. Furthermore, the GHS may be adopted in any of the four traditional sectors of the GHS: transport, workplace, agriculture (pesticides) and consumer products. As the transport sector has its own, longstanding international system - UN Recommendations on the transport of dangerous goods: model regulations – implementation in this sector may not be representative of specific work to bring in the GHS.

63. It may also be the case that a country does not bring the GHS into legislation but works with the private sector to bring in voluntary standards that are in line with the GHS. In addition, implementation could include transition periods, delayed implementation dates, and phased implementation of chemicals and mixtures. Such implementation may also relate to different editions of the GHS text. This factor means that it is also a case of legal interpretation in deciding what level of, and when, the GHS implementation has come into force. All of these options contribute to a broad picture of what constitutes the challenge of determining “implementation of the GHS”.
64. The UNECE website¹³ provides information on the implementation in 72 countries. However, the information is not always uniform, up-to-date, and is not necessarily an indication of specific implementation in a country (e.g. it may reference capacity building activities). To further the available information on the subject, the Stockholm Environment Institute (SEI) and Wageningen University & Research undertook a research in 2017: “The Globally Harmonized System of Classification and Labelling of Chemicals – Explaining the Legal Implementation Gap”¹⁴. The data presented in this progress reported is fully adopted from this research paper as the most up-to-date data on the GHS implementation globally.¹⁵

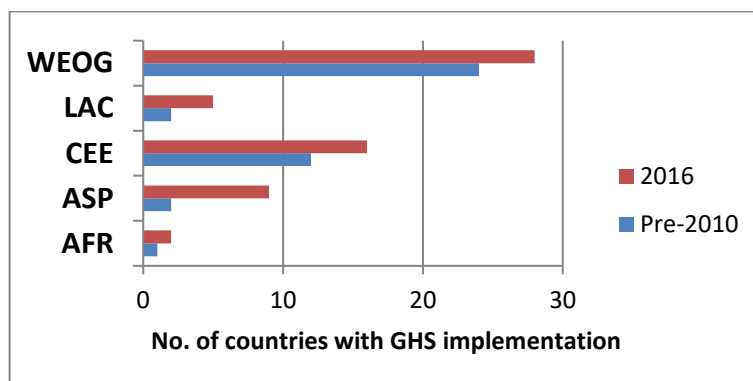


Figure 23 IOMC Indicator H Number of countries with full or partial implementation of GHS in 2010 and 2016 (UNITAR and UNECE)

65. As of 2010 which was a general baseline for IOMC indicators of progress throughout this report, 41 countries have fully or partially implemented GHS in their national legislation (Figure 23). Five governments implemented GHS in the period 2014-2016 (i.e. 2 CEE, 1 ASP, 1 LAC, 1 WEOG countries). The research indicated that as of 2016, 60 countries had fully or partially implemented GHS¹⁶ (31 per

¹³ https://www.unece.org/trans/danger/publi/ghs/implementation_e.html#c41818

¹⁴ Persson et al, 2017, Sustainability 2017, 9, 2176; doi:10.3390/su9122176

¹⁵ The paper was presented to the UN ECOSOC Sub-Committee of Experts on the GHS at its 33rd session in July 2017.

¹⁶ National GHS implementation status - as of 1 April 2017 - was defined as passing of national legislation on GHS, with the research categorising countries as:

- Full legal implementation: legislation passed as of 1 April 2017, irrespective of on which GHS revision the legislation is based, covering the workplace, agriculture and consumer sectors;
- Partial legal implementation: legislation passed as of 1 April 2017, covering at least one of the sectors agriculture, workplace or consumers;
- Not yet implemented in legislation: no legislation aligned with the GHS has been passed as of 1 April 2017, to the researchers' knowledge.

cent of UN member States). The number of countries with GHS legislation has increased consistently over the years with the largest growth in the period 2011-2013. As of April 2017, 50 countries (26 per cent of UN member States) had fully implemented GHS in national legislation, 15 countries (8 per cent) had partially implemented, and 128 countries (66 per cent) had not yet implemented. Furthermore, the paper provided background information on all UN member States, with links and information related to implementation.

66. Overall progress of the indicator 6 of SAICM was above-average with the ASP, CEE and WEOG regions reporting above 78 per cent advancement toward achieving compliance with GHS and harmonized labeling schemes. A large room for further work was observed in the AFR region with far below-average activity in international harmonized standards and a large number of countries who did not submit a report to PR3. Two QSP trust fund projects out of four were operating in the AFR region in this reporting period, focusing on indicator 6.

Indicator 7 Communication of risks to vulnerable groups

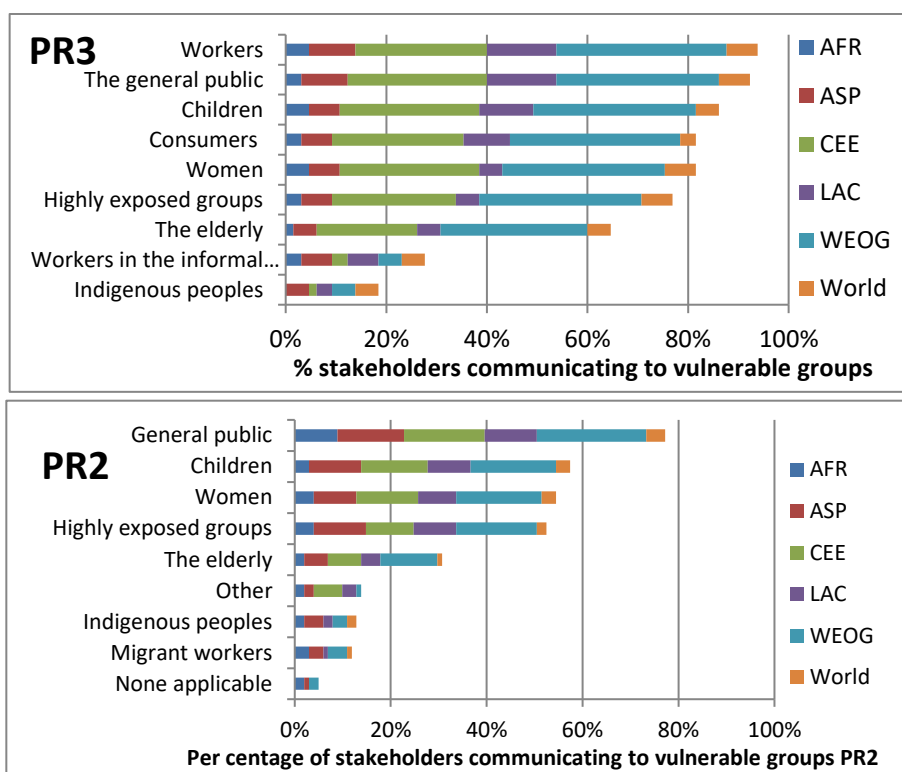


Figure 24 Per cent of respondents communicating to vulnerable groups

67. Indicator 7 measures the progress of the stakeholders with specific strategies in place for communicating information on the risks associated with chemicals to vulnerable groups (Figure 24, 25). More than 80 per cent of the respondents selected at least five vulnerable groups. On average at least three vulnerable groups were selected by all the respondents, similar to PR2. The 'workers', 'general public', 'children', 'consumers' and 'women' were the five most frequently selected vulnerable groups in PR3; having received between 82 and 94 per cent response rates. Whereas, the top four vulnerable groups in PR2 received a response rate of 31 to 77 per cent. Two categories of

‘workers’ and ‘workers in informal sector’ were newly introduced in PR3 and replaced the ‘migrant workers’ in PR2. The ‘workers’ were the most frequently selected group by 94 per cent response rate. However, the ‘workers in the informal sector’ stood close to the bottom of the list, before the ‘indigenous people’ by receiving 28 per cent of responses. The difference in activity levels between the two categories of workers indicated the existing gap in communicating with the ‘workers in the informal sector’. The ‘migrant workers’ in PR2 was the least informed vulnerable group in PR2 (12 per cent response rate) similar to the category of ‘workers in informal sector’ in PR3. Five QSP funded projects in the period 2014-2016 committed to communicate the risks associated to chemicals to vulnerable groups out of which one project was in the AFR region, one in the ASP region and three projects were in the CEE region.

68. A modified activity in the questionnaire sought to address the sectors involved in communicating the chemical safety to the vulnerable groups in PR3. Eighty-five and 83 per cent of all the respondents selected the environment and health sectors. The industry, labor, transportation and natural resources stood next; being selected by 75, 72, 57 and 57 per cent of all respondents, respectively.

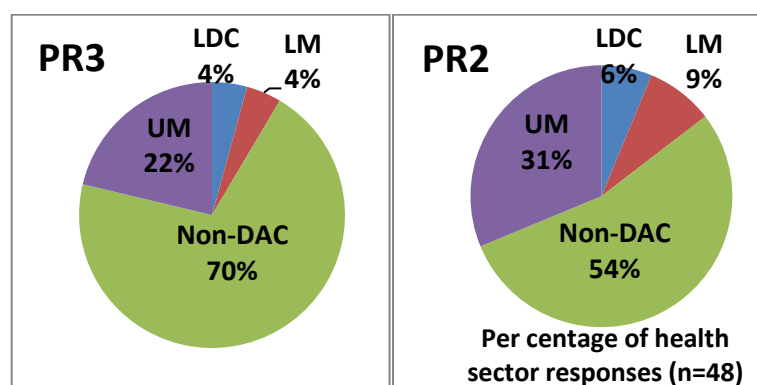


Figure 25 Respondents reporting health sector involvement in communicating with vulnerable groups, by DAC status; n=47 for PR3

69. The respondents who selected the health sector involvement in communications are demonstrated according to their DAC-Status in figure 25. Forty-seven respondents indicated the involvement of the health sector. The proportions of the responses according to DAC-status were similar between PR3 and PR2 in the sense that non-DAC countries dominated the submitted responses. Seventy per cent of the non-DAC and 22 per cent of UM countries selected the health sector in PR3 as compared to 54 and 31 per cent respectively in PR2. Only 4 per cent of all the respondents were from LM and LDC countries respectively which highlighted the remaining gaps between lower and higher income countries similar to the previous report. The results stressed the large room for improvement and the need for more work in this area and better coordination of the health sector activities.
70. In summary, the AFR respondents demonstrated a relatively higher level of activity to this indicator as compared to the majority of indicators. With above-average activity worldwide, this indicator has received substantial attention from QSP trust fund funded projects in this reporting period with a total of five projects in the AFR (1), ASP (1) and CEE (3) regions.

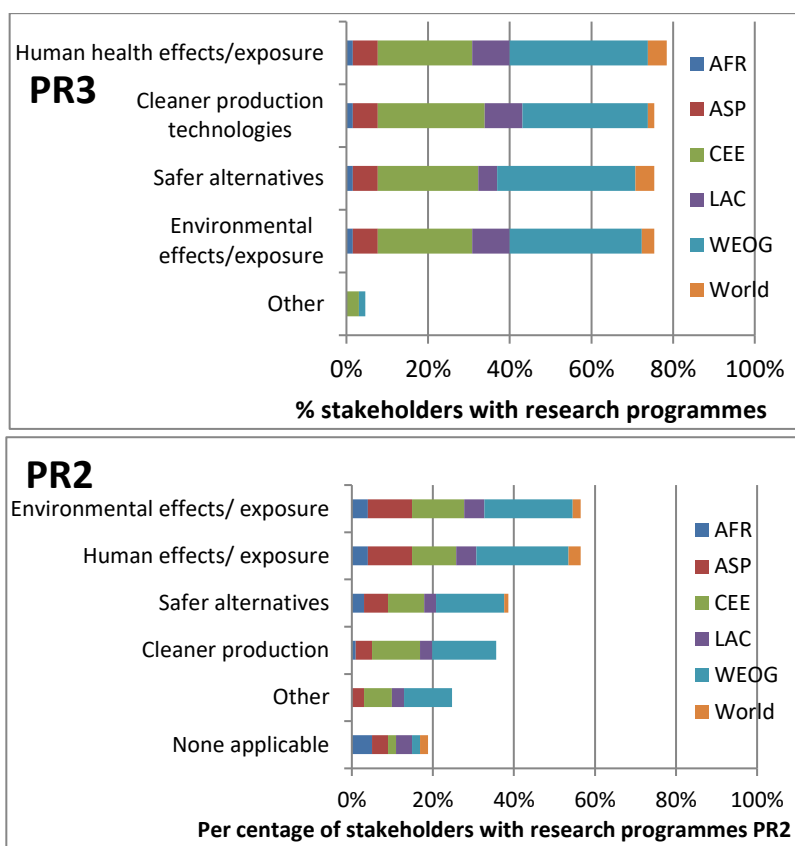
Indicator 8 The number of countries (and organizations) with research programmes

Figure 26 Per cent of respondents with research programmes

71. Indicator 8 measures the number of stakeholders with research programmes (Figure 26). At least 75 per cent of the respondents selected to have research programmes under all the identified research categories. The response rates were very close for all the identified research categories. The 'human effects' were the most frequently selected with 78 per cent response rate, versus 56 per cent response rate in PR2. The 'safer alternatives and cleaner production technologies' were equally selected by 75 per cent of the respondents (i.e. 49 respondents) which showed an increase from 39 and 36 respondents in PR2, respectively. This is a significant improvement in amount and extent of research programmes on chemicals. The 'environmental effects' also received 75 per cent response rate in this period versus 56 response rate in PR2 (i.e. 57 respondents).
72. Majority of WEOG countries (more than 83 per cent) have research programmes in almost all the identified categories. About 67 per cent of the LAC, ASP regions (i.e. 4 to 6 respondents) and 83 per cent of CEE respondents conducted research in at least three out of four of the research categories. There was still a large room for improvement, in particular, on research on 'cleaner production technologies' in the AFR, ASP and LAC regions. A new activity in the questionnaire sought to highlight the sectors that were majorly involved in conducting the research programmes in PR3. Seventy-five per cent of the stakeholders selected the environment and another 72 per cent indicated the health sectors as the two most common sectors involved in research programmes.

73. The research programmes require substantial amount of resources and funding in order to generating scientifically reliable and reproducible data and results. The LDC group with far below-average level of activity and the non-DAC group with slightly above-average level of activity pointed out the large gap among the countries in different development groups in regard to the research activities. Majority of respondents in AFR, LAC and ASP reported below-average activity in this area, whereas CEE and WEOG reported significantly above-average progress under this indicator. Notably, no QSP trust fund project involved research programmes in this reporting period.

Indicator 9 Websites providing information to stakeholders

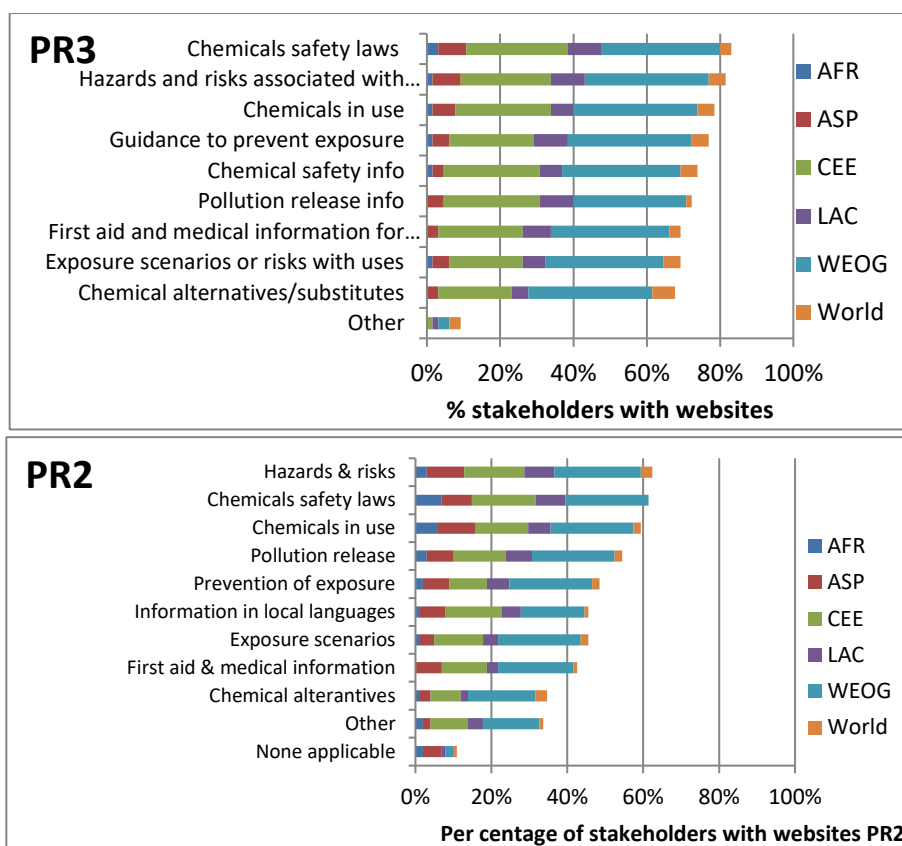


Figure 27 Per cent of respondents with websites providing different types of information to stakeholders

74. Indicator 9 shows the progress on the number of respondents maintaining websites that provide publicly available information (Figures 27, 28). The top three topics of information that were covered in the websites were the same as PR2 with a change in their ranks. The topic of 'chemical safety laws', 'hazards and risks associated with chemicals', and 'chemicals in use' were covered in the websites by 83, 82 and 78 per cent of the stakeholders. On average, the respondents reported the existence of websites on 6.7 topics out of 9 topics (except 'other'); up from 4.8 in PR2.
75. The majority of the CEE respondents, more than 70 per cent, selected the websites on all the 9 topics. According to the QSP trust fund, three projects in the CEE region in the period 2014-2016 were operating to communicate chemicals risks through publications of new websites or other channels of public information to stakeholders. Sixty-seven per cent of the AFR region (i.e. 2 respondents out

of 3) reported to have websites on 'chemical safety laws' whereas only 33 per cent or one AFR country reported to have websites on other top two topics. At least 50 per cent of the respondents of the LAC and ASP regions had websites on 5 to 6 topics respectively. One QSP funded project in the period 2014-2016 in the AFR region and one in the ASP region involved the development of websites whereas no project in the LAC region addressed this indicator. Although the progress has been significant, the results generally underscored the possible room for improvement in all the rest of regions except for the WEOG and CEE. At least 83 per cent of the WEOG stakeholders reported to have websites on all the nine topics identified in this activity.

76. On an additional note, the two government respondents of Belgium and France provided information on their activities in regard to Nanotechnologies. Belgium emphasized their efforts through Belgian registry for Nanomaterials, launched in 2015, to guarantee transparency and thus to strengthen the confidence of the public and the workers in this area. France put in place an annual reporting system for nanoparticulate substances. The data are collected in an information system and accessible online¹⁷, aims to respond to the need to improve the information of the public, consumers and professionals.
77. In response to a newly added activity in PR3, 58 per cent of the SAICM stakeholders noted the increase in the overall amount or the update of chemical safety information available through websites over the 2014 to 2016 period (Figure 28A). Another new question sought to measure the share of other channels of public information in communicating the chemical safety (Figure 28B). The responses showed that 88 per cent of all the stakeholders used at least one of the categories of channels of public information including the 'social media' (e.g. Twitter, Facebook etc.), 'printed media', 'television', 'radio', or 'community workers'. Hundred, 89, 83, 83 and 33 per cent of the CEE, LAC, ASP, WEOG, and AFR respondents, respectively noted the use of other channels of public information. The large level of activity highlights the growing impact of 'social media' as a platform chosen by many countries and organizations to communicate information on chemical safety to the public.
78. The indicator 9 of SAICM obtained the largest average score worldwide with 0.85 points with the CEE region being the most active (average score 0.94) and the AFR region the least active (average score 0.42). Five projects in total in the AFR (1), ASP (1) and the CEE (3) regions were developing websites or other channels of sharing information with stakeholders in this reporting period according to funded projects by QSP trust fund.

¹⁷ www.r-nano.fr

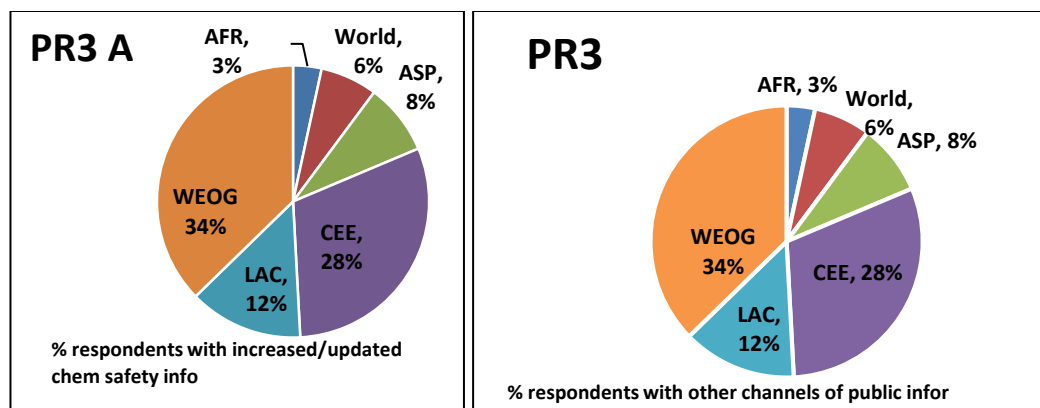


Figure 28 Per cent of respondents (A) increased or updated publicly available chemical safety information through websites over the 2014 to 2016 period (B) used other channels of public information in communicating chemical safety

2.2.3. Objective C Governance

Indicator 10 Commitments to implementation of the Strategic Approach

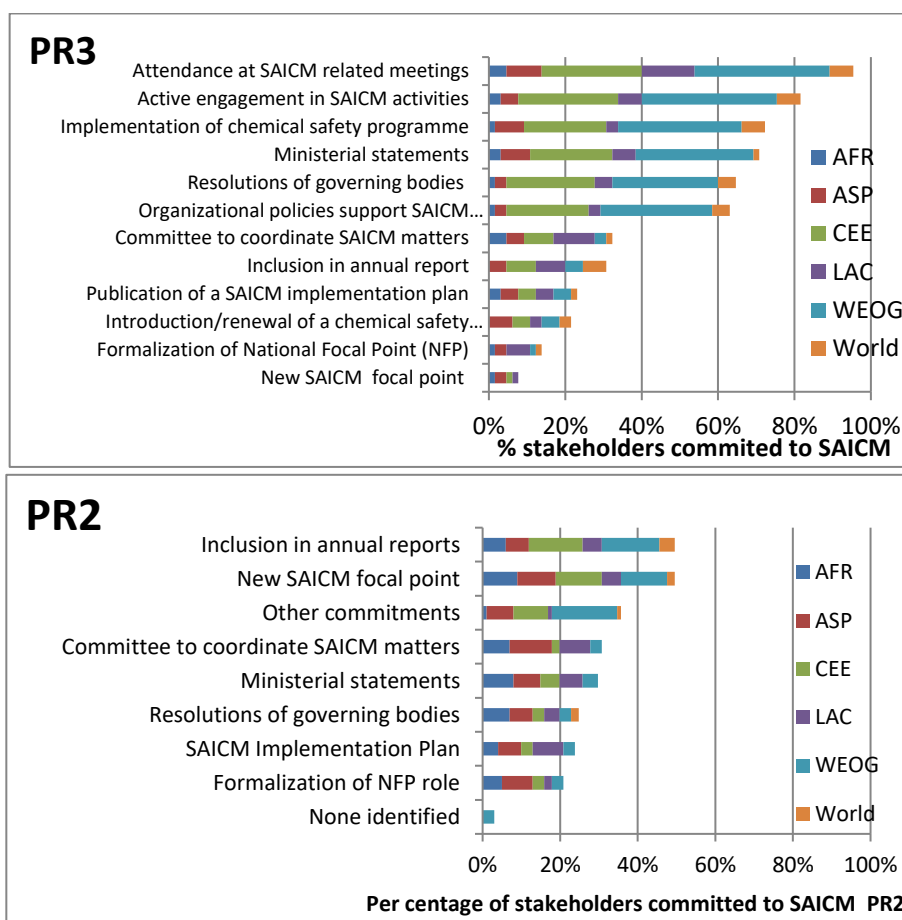


Figure 29 Per cent of respondents committed to SAICM

79. Indicator 10 addresses the commitments to the implementation of the strategic approach (Figure 29). Several new activities were added to this indicator in PR3 including 'attendance at SAICM related meetings', 'active engagement in SAICM activities', 'implementation of a chemical safety programme', 'organizational policies supporting SAICM', and 'introduction/renewal of a chemical safety programme', most of which were selected by more than half of the respondents. The majority of SAICM stakeholders selected 'attendance at SAICM related meetings' (95 per cent) and 'active engagement in SAICM activities' (82 per cent). Notably, all the respondents of AFR, LAC and ASP regions indicated to have attended the SAICM related meetings. The WEOG respondents also reported a high level of activity by attending the SAICM meetings and engaging in SAICM related activities with 96 per cent response rate. Despite that, WEOG reported far less activity on almost five out of 12 specified activities similar to PR2, including but not limited to the 'committee to coordinate SAICM matter', 'inclusion in the annual report', 'publication of a SAICM implementation plan'.
80. On average, the respondents selected 48 per cent of the available options which showed a growth from PR2 (33 per cent). Only 8 per cent of the respondents selected 'nomination of a new national or organizational SAICM focal point' which was greatly smaller than the rate in PR2 likely because those governments who had selected this activity in PR2 likely did not repeat reporting in this reporting period. Publishing a 'SAICM Implementation Plan' did not improve since PR2 while the 'formalization of a SAICM national focal point' decreased; 9 respondents in PR3 versus 21 respondents in PR2. There has been no clear improvement on the 'establishment of a committee to coordinate on the chemical safety, including SAICM matters' from PR2.
81. Certain activities enjoyed a significantly large growth since PR2. The 'ministerial or other official public statements expressing support for SAICM' has also depicted a progress; 46 respondents in PR3 versus 30 respondents PR2. An increase in response rate for 'resolution of governing bodies' as compared to PR2 was observed; 42 respondents in this period as compared to 25 respondents in PR2. Furthermore, the number of stakeholders who selected 'other commitments' significantly dropped in PR3. Only three government respondents selected 'other' (6 per cent) whereas this activity received 36 per cent response rate in PR2. The advancement under this indicator was justified by many of the QSP trust fund projects in this reporting period (i.e. six out of 15) pledged to commit to the implementation of Strategic Approach in particular introduction of a chemical safety programme and publication of a SAICM implementation plan.
82. This indicator had an overall below-average level of activity worldwide, even though it has progressed since PR1 and PR2 by 15 per cent, on average. Six projects funded by QSP were evenly distributed among the AFR, ASP and LAC regions (i.e. two projects for each) mostly focusing on development of publication of SAICM implementation plan and introduction or renewal of a chemical safety programme among other relevant activities to this indicator.

Indicator 11 Multi-stakeholder coordination

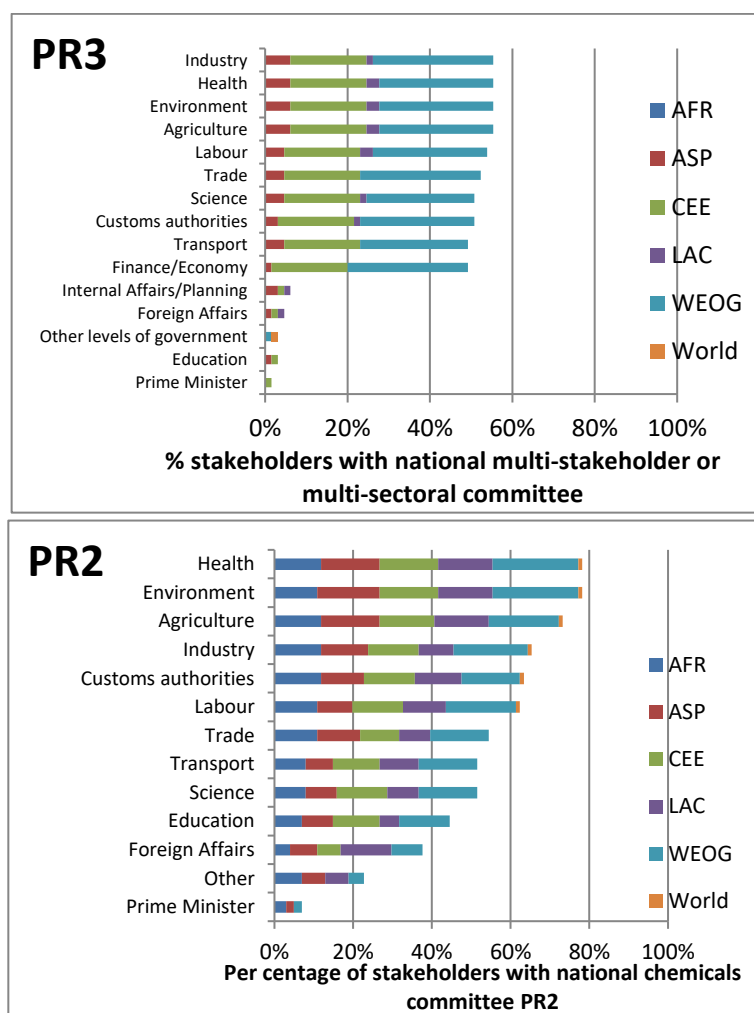


Figure 30 Per cent of respondents with national multi-stakeholder or multi-sectoral committee to address chemical safety issue

83. Indicator 11 addresses the number of countries (and organizations) with multi-stakeholder or multi-sectoral coordination mechanisms (Figure 30). For this indicator, one activity was addressed to the governments about their governmental and multi-sectoral committee, whereas a new activity targeted the organizations (i.e. NGOs, IGOs, etc.) about the existence of non-government or multi-sectoral committees and the types of stakeholders involved in them.
84. Seventy-seven per cent of all the respondents selected the first activity on the presence or the development of a government (only) committee and 91 per cent indicated the presence or the development of a multi-sectoral committee respectively. Figure 30 demonstrates different government ministries with a national government committee to address chemical safety issues. The per cent of the respondents selecting the ministries or agents involved in their national committee declined in PR3 as compared to PR2. Moreover, the responses were largely represented by CEE and WEOG regions as is clear in the figure 30. The small response rate might be attributed to the modifications to the phrasing of the questions in this indicator. None of the AFR countries specified

the presence of government (only) committee and the three AFR respondents selected the presence of multi-sectoral committee. Whereas, in PR2 the AFR region reported the involvement of an average 9.2 ministries on their committee.

85. The ministries of Industry, Health, Environment, and Agriculture were the most common participants in government committees similar to PR2. The ministries of Finance or Economy and Internal Affairs or Planning were added to the list in PR3 and were selected by 49 and 6 per cent of the respondents.
86. The respondents were asked in two separate questions about the type of stakeholders on their non-government and on the multi-stakeholder committee. This modification to the activities seemed to have negatively affected the responses. Unfortunately, the responses to the activity on the type of stakeholders in the non-government committee were only submitted by the EU on behalf of its member States. The rest of the respondents left this activity blank. This low rate of response could have been due to the very slight difference between this activity and the next activity in the questionnaire about the type of the stakeholders on the multi-stakeholder committee. As a result, the respondents might have misunderstood and not responded to the activity.
87. The second part of this activity on the types of stakeholders on the multi-stakeholders committee received many more responses. Seventy-seven and 75 per cent of the respondents selected the industry and the government as the types of stakeholders. The civil society, academia and intergovernmental organizations were selected by 75, 72 and 57 per cent of the respondents. The interests represented on this multi-stakeholder committee concerned majorly the industry and the environment, selected by 77 and 78 per cent of respondents, respectively. The human rights and cultural groups did not receive much of the attention of the multi-stakeholder committee; having received 49 and 3 per cent response rates, respectively.
88. Overall, an above-average level of activity reported for this indicator worldwide, even though the AFR, ASP and LAC regions reported a below-average level of activity, The CEE and WEOG regions reported an above-average and completed nearly 70 per cent of the activities in this reporting period. Three projects in the AFR (1) and the CEE (2) regions were funded by QSP trust fund in this reporting period to improve multi-stakeholder coordination in particular among government ministries.

Indicator 12 Implementation of key international chemicals agreements

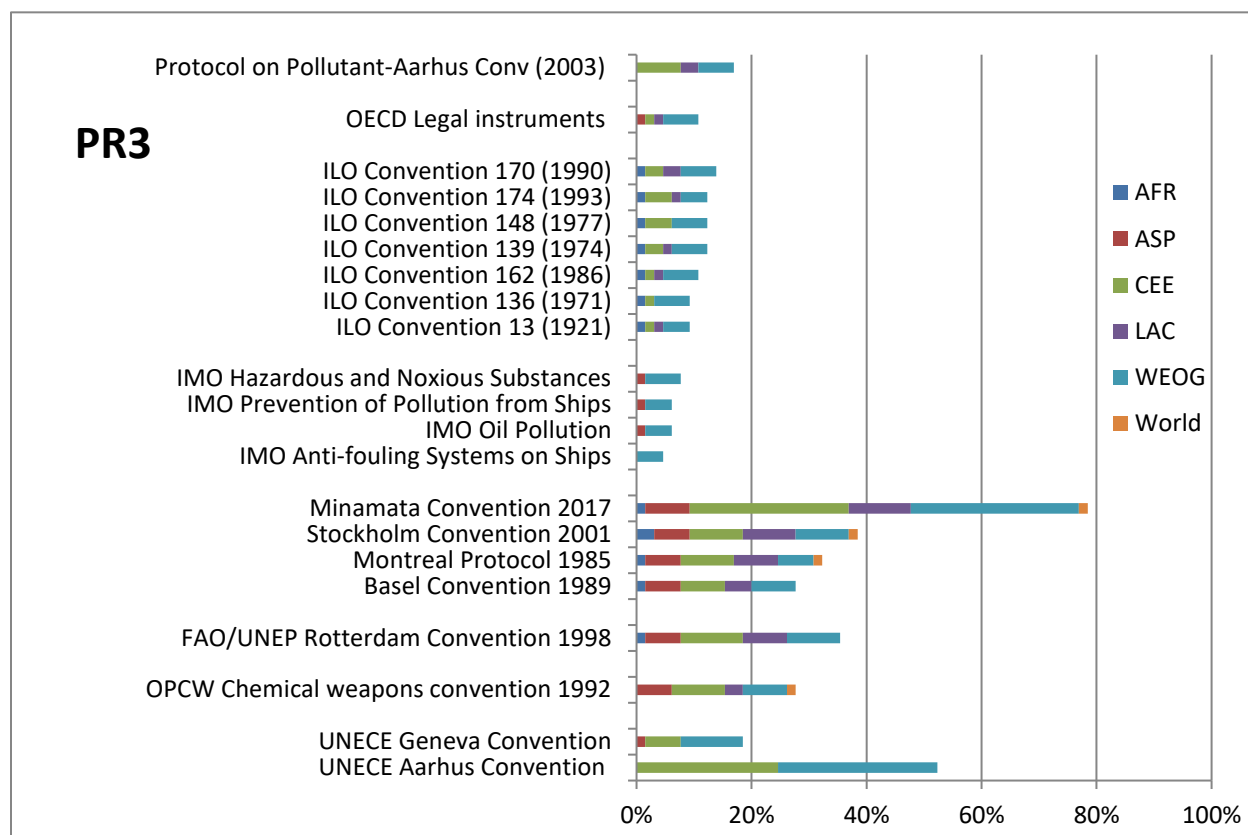


Figure 31 Per cent of stakeholders making significant changes made to the status and/or implementing of (e.g. through the enacting of legislation, programme implementation, or through relevant policies) international priorities

89. Indicator 12 seeks to measure the significant changes made to the implementation of international or regional chemical instruments over the 2014-2016 period (Figure 31). This indicator in the previous progress reports asked for the number of stakeholders which have ratified or implemented any of the specified chemical instruments.
90. The top two international instruments which received the highest response rate were the Minamata Convention (i.e. 78 per cent) and the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (i.e. Aarhus Convention) (i.e. 52 per cent). The other top-ranking international priorities with about 30 per cent response rates were the Stockholm Convention on Persistent Organic Pollutants, the FAO/UNEP Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Montreal Protocol, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the Organization for the Prohibition of Chemical Weapons (OPCW) chemical weapons Convention. The Minamata convention entered into force on 16 August 2017 and an increasing number of countries ratified the Convention since then.

91. The ASP region showed the highest level of activity in the implementation of Basel Convention, Stockholm Convention and Montreal Protocol at 67 per cent response rate and Minamata Convention at 83 per cent response rate.

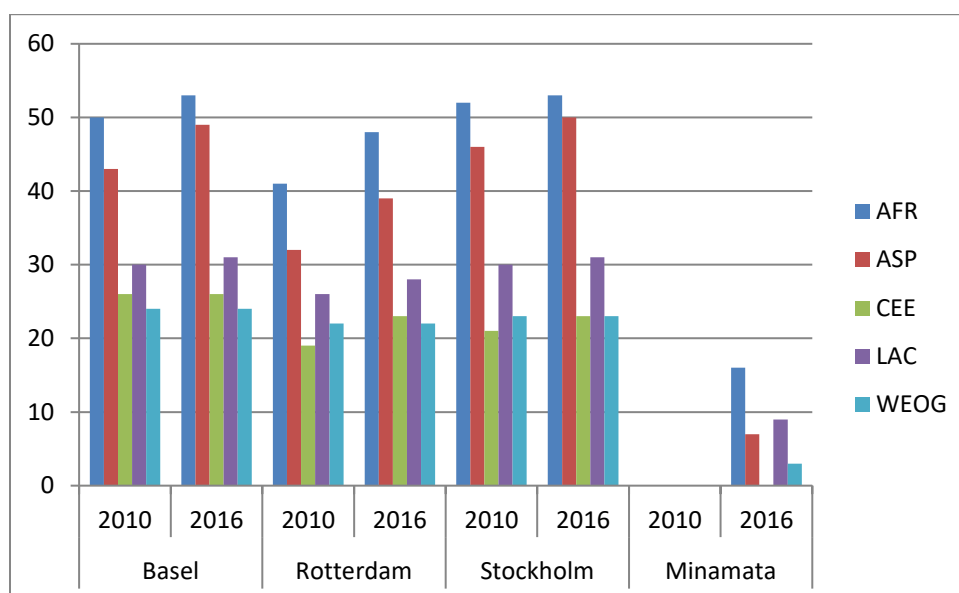


Figure 32 IOMC Indicator G Number of parties to the Basel, Rotterdam, Stockholm in 2010 and 2016 and number of ratifications of Minamata Convention as of 2016¹⁸

92. Indicator G of IOMC reports on the number of the parties to the Basel, Rotterdam, Stockholm and Minamata conventions (Figure 32). Thus, a closer look at the number of ratifications provided by this indicator of IOMC helps to provide a more comprehensive picture of the global status with these four important chemical instruments.
93. The number of ratifications of the Minamata Conventions was 35 as of 2016 (34 in the period 2014-2016), given that it did not enter into force until 16 August 2017 (101 Parties as of 7 January 2019). It was notable that the majority of the government respondents to SAICM reporting tool (46 governments or 85 per cent) indicated that they have made significant changes to their country's status and/or implementation in regard to the Minamata Convention in the period 2014-2016.
94. The number of parties has reached 183 for Basel, 160 for Rotterdam, 180 for Stockholm as of 2016. The data shows a steady growth in the number of parties since 2010 as the baseline of IOMC indicators by 4, 5 and 10 per cent on average for the Stockholm, Basel, and Rotterdam, respectively. Looking at the data for the period 2014-2016, 1, 4 and 6 new parties were added in this period to the Stockholm, Basel and Rotterdam conventions, respectively.
95. Looking at the regional data, 100 per cent of the countries in the CEE region have ratified the Basel, Rotterdam and Stockholm conventions. Moreover, the majority of the AFR States are parties to the BRS Conventions; 98, 89 and 98 per cent of the member countries have ratified the Basel, Rotterdam and Stockholm Conventions, respectively. No new ratifications were recorded by the LAC and WEOG

¹⁸ The Minamata Convention entered into force on 16 August 2017, thus there were no "parties" before that. While the indicator is number of parties, we are currently showing number of ratifications.

States in the period 2014-2016. Most of the growth in the number of parties was thanks to the AFR, ASP regions.

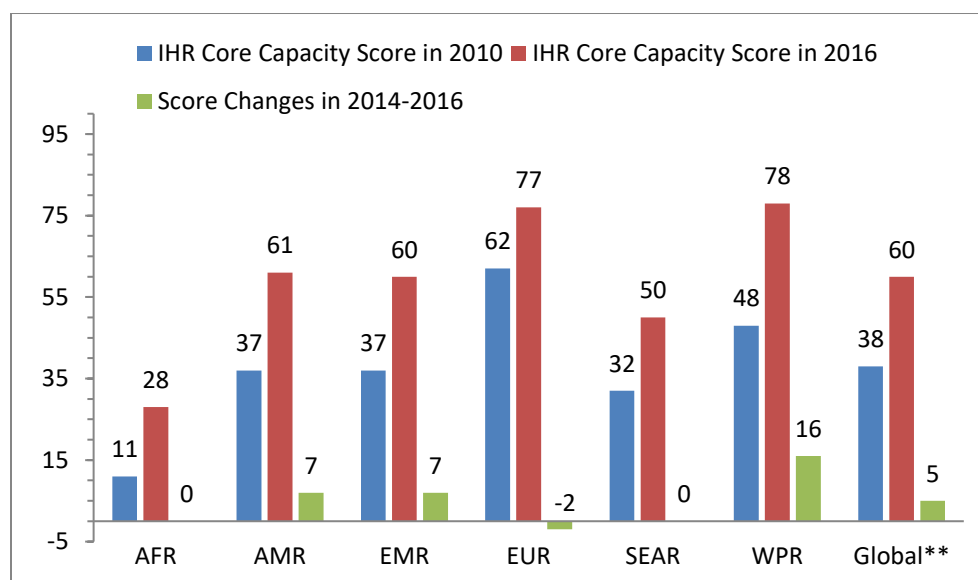


Figure 33 IOMC Indicator F Per cent of Average Core Capacity score per WHO region core capacities for chemicals under the International Health Regulations. **The data for Global is calculated from regional averages (WHO)

96. In 2010, WHO developed and shared with States Parties a core capacity monitoring framework, with a questionnaire on the status of implementation of the International Health Regulations for States Parties to complete¹⁹. This framework included a checklist and 20 indicators on the status of eight core capacities, including those related to chemical events. The self-assessment tool constituted the basis for reporting on the implementation of the International Health Regulations by WHO between 2010-2017.²⁰
97. Indicator F of IOMC reports on the International Health Regulation (IHR) Average Core Capacity Score and is used to describe the level of achievement of a core capacity. The Average Core Capacity Score or Attribute Score is the per cent of attributes, i.e. capacities in a technical area that have been achieved. In the case of chemical events, this includes, for example, if experts were identified for public health assessment and response to chemical incidents; national policies or plans were in place; designated focal points were nominated; coordination mechanisms were established; surveillance systems were in place; priority chemical events/syndromes were identified; inventory of major hazard sites was created; a national chemical profile was developed; manuals and Standard Operation Procedures (SOPs) were in place; information exchange was functioning; laboratory capacity was available; and Poison Centre(s) were in place. The minimum Score is 0 per cent when none of the elements and functions listed in the checklist have been achieved. The maximum Score

¹⁹ This questionnaire was filled out by the states on a voluntary basis.

²⁰ Data on the WHO International Health Regulations (IHR) was removed from the SAICM online questionnaire under indicator 12 in this reporting period, due to certain inconsistencies in reporting in the previous round, and thus the data was provided directly by WHO.

is 100 per cent once all elements and functions are in place. The Score is 50 per cent if half of the elements and functions are in place.

98. IHR is a legally binding treaty and as of 2016 there were 196 parties. Since 2010, the baseline data for IOMC indicators throughout this report, there has been considerable improvement in the developments of core capacities for the chemicals in a global scale. The Average Core Capacity Score increased between 15 to 30 per cent across all the WHO regions (Figure 33). Almost all the regions, except for the Africa, reached a Score above 50 per cent in 2016 with an average global Score of 60 per cent. The largest growth since 2010 was in the Western Pacific region which obtained 78 per cent of the total Core Capacity Score; up by 16 per cent in this reporting period. In the period 2014-2016, the South East Asia and Europe regions were found to have made zero to negative progress toward core capacity for the chemicals.

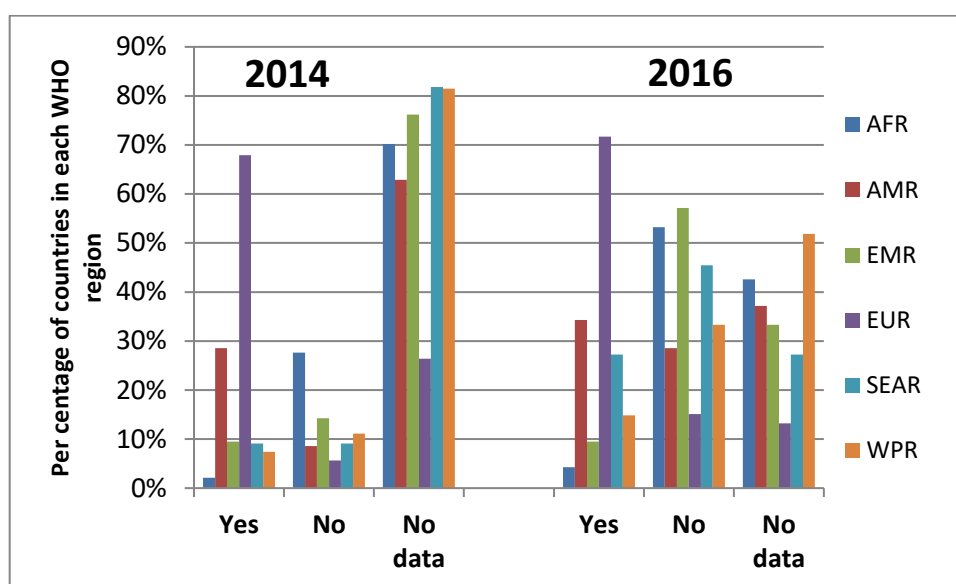


Figure 34 IOMC Indicator D Per cent of countries in each WHO region with controls over lead in decorative paint (WHO and UNEP)

99. Indicator D of IOMC addresses the progress of countries with controls over lead in decorative paint (Figure 34). The ILO Convention 13 (1921) which addresses use of white lead in painting, under indicator 12 of SAICM is linked with indicator D of IOMC. According to indicator 12, in the period 2014-2016, 9 per cent of all the SAICM stakeholders made significant changes to their country's (organization's) status in regard to this convention.
100. The IOMC data on lead paint was collected through a series of questionnaires filled by the States in 2014 as the baseline, as reported to the 2014 SAICM Open-Ended Working Group (OEWG), in 2015 (as reported to ICCM4) and 2016. As of 2016, 61 countries reported having control mechanisms over lead in decorative paint, up by 5 per cent (of 194 WHO member States) from 2014. As it is notable in figure 34, 60 per cent of countries did not provide any information ('no data') in regard to controls over lead paint. Whereas, this number decreased steadily to 33 per cent of member States in 2016. Nevertheless, a majority of the non-responding countries in 2014 (23 per cent) indicated to be among countries with no control over lead paint in 2016.

101. The WHO regions showed a growth in controlling the lead paint in the period 2014-2016, except for the Eastern Mediterranean region that remained unchanged, with only 2 out of 21 countries controlling the lead paint. The largest growth was observed in South East Asia region with 18 per cent increase in the number of countries with controls over lead paint. Noticeably, 72 per cent of the countries in the Europe region reported the presence of controls over lead paint. The smallest level of activity on this issue was in the Africa region with only 4 per cent of the countries controlling lead paint.
102. IPEN in their Citizen's report as well as in their progress highlights submitted to this progress report, noted several activities in regard to lead paint elimination²¹ which provided a more comprehensive perspective on global progress. In the ASP region, by 2015, 80% of the paint market in the Philippines has committed to IPEN's "Lead Safe™ Paint" 3rd Party Certification Program. In addition, lead paint regulations are now in place or promised by governments in all 7 Asian countries that participated in IPEN's Asian Lead Paint Elimination Project (Sri Lanka (enacted), Philippines (enacted), Nepal (enacted), Indonesia, Thailand, Bangladesh and India).²²
103. In the AFR region, in 2014, IPEN launched a medium-sized project from the GEF²³ supporting national lead paint elimination activities in four countries. Partners in the project are Centre de Recherche et d'Education pour le Développement (CREPD), Cameroon; Jeunes Volontaires pour l'Environnement (JVE), Ivory Coast; Pesticide Action Nexus Association (PAN-Ethiopia), Ethiopia; and Agenda for Environment and Responsible Development (AGENDA), Tanzania. In addition, selected activities were implemented in several other countries in the AFR region under the project. IPEN also reported on new lead paint bans, in 2016, in India and Thailand, and a regional standard for the six countries (Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda) of the East Africa Community (EAC). Ethiopia and Cameroon had introduced draft legislation for new lead paint regulations; and Kenya and Tanzania have begun developing regulations to implement and enforce the new EAC lead paint standard. In addition, in 2016 IPEN secured a grant from UNEP Europe Regional Office to conduct lead paint activities and a multi-stakeholder workshop in Moldova. As a result, this project on lead paint is being included in the government's effort to make a comprehensive national regulation on chemicals.
104. Activities by IPEN in both the AFR and the ASP regional projects included studies of lead levels in paint; outreach to paint manufacturers to disseminate information about the hazards of lead in paint, especially to children's health, and dialogue to promote reformulation of lead-containing paint; outreach to policy-makers to encourage enactment of national regulation restricting the use of lead in paint; and establishing and promoting the Lead Safe Paint Certification program.
105. In addition, IPEN reported that as a direct result of their work on elimination of lead paint, their recent studies suggest that, with a few exceptions, paint companies with the largest national market shares have shifted to products with less than 90 parts per million (ppm) lead content; the standard in the U.S. and other industrialized countries. Moreover, paint companies with majority market share

²¹ [Global Lead Paint Report \(2016\)](#) and [Eliminating Lead in Paint in Seven](#) Asian Countries

²² The EU funded this 2012-2015 IPEN project through the SwithAsia Program, noting all outcomes are online via the [EU Switch Asia Program](#).

²³ [Global Environment Facility \(GEF\) to be executing agency for the African Lead Paint Elimination Project \(2014-2017\)](#) with UNEP as implementing agency

(90%) in the Philippines have applied to be part of the world's first third-party certification program for lead content of paint. The program, Lead Safe Paint Certification, was pioneered by IPEN and its NGO partner EcoWaste Coalition, and assures a lead content below 90 ppm in certified paint.

106. Overall, the indicator 12 of SAICM on significant changes to the international instruments specific to this reporting period obtained considerably small level of activity across all the regions, except for Minamata Convention. Thus, the small overall score (i.e. 0.21) obtained for the indicator 12 is not representative of the number of countries who have already ratified the specified international instruments prior to this reporting period.

2.2.4. Objective D Capacity Building and Technical Cooperation

Indicator 13 Financial and in-kind resources to assist capacity-building and technical cooperation

Table 1 Number of governments (and Organizations) providing bilateral financial and in-kind assistance to other governments to improve their capacity for the sound management of chemicals

No. of Donors= 40	LDC	LM	Non-DAC	UM	Grand Total
Financial assistance					36
Govt		1	31		32
Industry			1		1
IGO			3		3
In-kind and/or Other Financial assistance					37
Govt			31		31
Industry			1		1
IGO			5		5
No Financial assistance					1
Govt			1		1
Industry					
IGO					
Blanks					5
Govt			4		4
Industry			1		1
IGO					

107. Indicator 13 shows the number of countries (and organizations) providing resources (financial and in-kind) to assist capacity building and technical cooperation with other countries (Table 1). In PR3, 35 respondents identified as donor and 5 identified as both donor and recipient out of which 34 were the governments. Two of IGOs indicated as both donor and recipient and one IGO did not specify their status. All the NGOs identified as recipients. Both industry respondents reported as donors. This was larger than the number of donor countries in PR2 (i.e. 30 donors), even though, the number of respondents to PR3 (n=65) was much smaller than PR2. In PR3, 31 government respondents, or 84 per cent of non-DAC countries²⁴, provided financial assistance. One LM country, one private sector

²⁴ 'non-DAC' refers to the countries that are not on the DAC list of aid recipients (DAC List of ODA Recipients)

and three IGOs indicated provision of financial assistance. In addition, 37 respondents report in-kind assistance out of which 31 were the governments, four IGOs and one from the private sector. Two non-DAC governments and two IGOs also indicated 'other' types of assistance. One donor government and one donor from the private sector did not provide any response (i.e. Blanks) to this activity.

108. This indicator overall obtained one of the four smallest scores among all the SAICM indicators of progress; 0.22 on average.

Indicator 14 Identification and prioritization of capacity-building needs

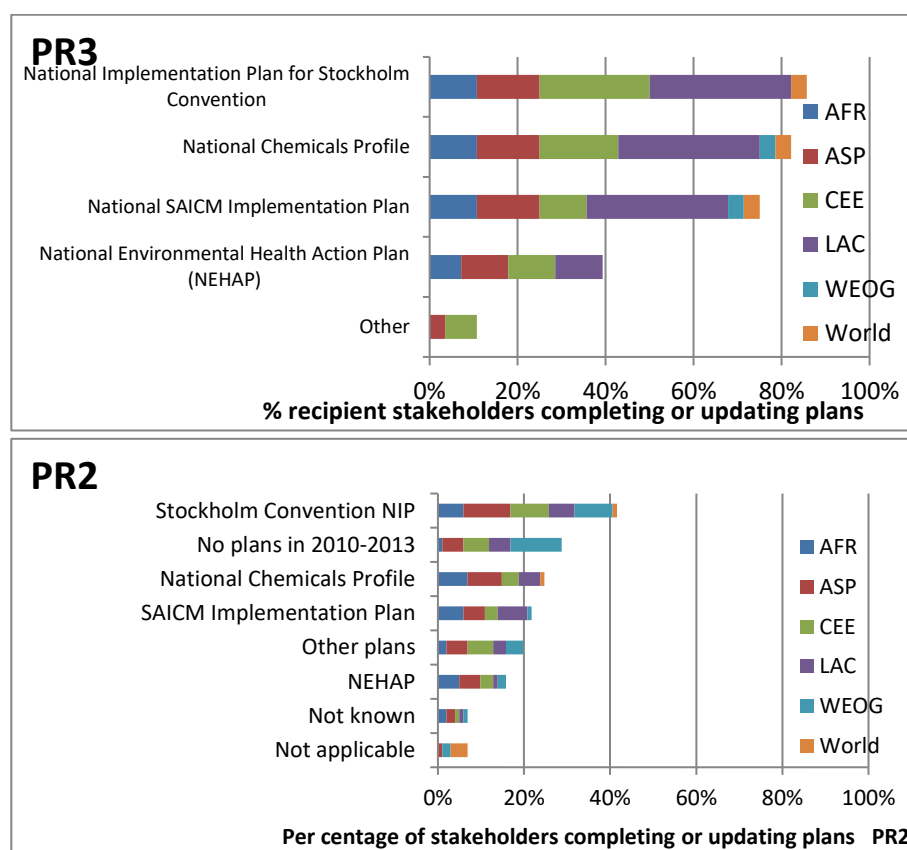


Figure 35 Per cent of respondents completing or updating plans

109. Indicator 14 of SAICM addresses the number of recipient countries (and organizations) that have identified and prioritized their capacity-building needs for the sound management of chemicals (Figures 35, 37). 'National implementation Plan for Stockholm Convention' has decreased to 24 respondents who selected this activity versus 42 respondents in PR2 (Figure 35). 'The National Chemical Profile' and 'SAICM Implementation Plan' each were selected by 82 and 75 per cent of the recipient respondents which showed a slight decrease as compared to PR2; 23 and 21 respondents in PR3 versus 25 and 22 respondents, respectively in PR2.

110. IPEN reported on the completion of the implementation of the China Chemical Safety²⁵ in collaboration with Arnika (Czech Republic) and Green Beagle (China), in 2014, in order to strengthen the capacity of civil society organizations and communities impacted by pollution and increase chemical safety in China. This project has played a role in training impacted communities on how to participate in Environmental Impact Assessment (EIA). Through multi-stakeholder trainings, impacted communities have been informed about what the company and relevant government departments should do to avoid unregulated emissions and releases and how to address infractions in the original commitments made in the approved EIA forms of the projects. The project carried out a series of 11 case studies on pollution from metals, wastes, PM2.5 and chemicals such as dioxins and polychlorinated biphenyl (PCBs).
111. Indicator A of IOMC indicators addresses the number of countries which have prepared a National Profile (Figure 36). The National Profile Support Programme of UNITAR provides guidance, training and technical support to the countries in order to assess the existing infrastructure for the sound management of chemicals.²⁶ The International Conference on Chemicals Management (ICCM) Resolution I/4 has recognized the development of a National Profile as a key enabling activity to support SAICM implementation.²⁷ As of 2016, 116 countries have prepared a National Profile which showed a slight growth (nine per cent) since 2010 as the baseline (Figure 36).²⁸

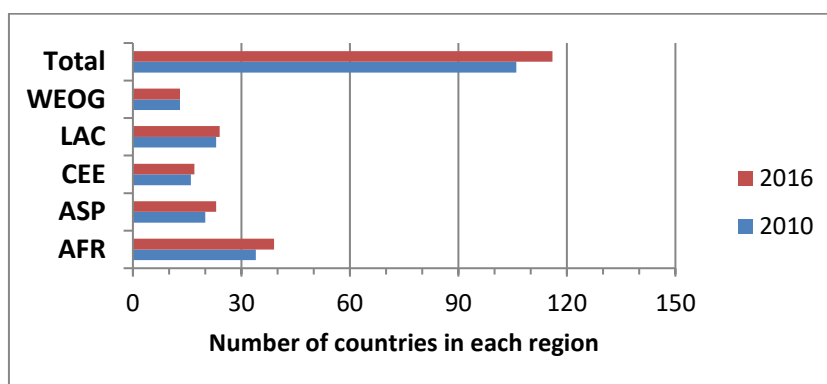


Figure 36 IOMC Indicator A Number of countries in each SAICM region with National Profiles (UNITAR)

112. According to UNITAR, a majority of CEE (74 per cent), LAC (73 per cent) and AFR (72 per cent) countries have prepared a National Profile. Whereas, less than half (43 per cent) of ASP and WEOG countries had a National Profile. Nevertheless, the number of National Profiles increased by 9 per cent in the AFR region since 2010, the largest growth among regions.
113. A new activity in SAICM questionnaire sought to identify the priority needs based on the 11 basic elements from the overall orientation and guidance document²⁹ under indicator 14 (Figure 37). Up to 75 per cent of all the recipient respondents reported their needs, with more than 50 per cent of the respondents across almost all the regions, except for the majority of WEOG and CEE respondents

²⁵ <https://ipen.org/projects/china-chemical-safety-project-2012—2014>

²⁶ <https://www.unitar.org/cwm/saicm/national-profile>

²⁷ <https://www.unitar.org/cwm/saicm/national-profile/policy-recommendations>

²⁸ Ten other countries also updated their National Profiles between 2011 and 2016.

²⁹ SAICM Document- Overall Orientation and Guidance for achieving the 2020 goal of sound management of chemicals

who were among the donor countries and did not respond to this activity. Fifty-seven per cent of government respondents (14 countries) indicated that they have identified a need for institutional-strengthening in regard to the poison centres.

114. Indicator C of IOMC tracks the number of countries with poison centres. This indicator is interlinked with indicator 14 of SAICM on the number of countries that have identified the priority needs in regard to dealing with chemicals accidents, including institutional-strengthening for poison centres based on the 11 basic elements (Figure 38). The data were obtained from the questionnaires that were carried out together with ad hoc updates from the WHO regional offices. A total of 91 countries had poison centres in 2010 versus 90 countries by the end of 2016, noting that the poisons centres can be opened as well as be closed down. The number of poison centres in 2016 accounts for over 46 per cent of WHO member States.

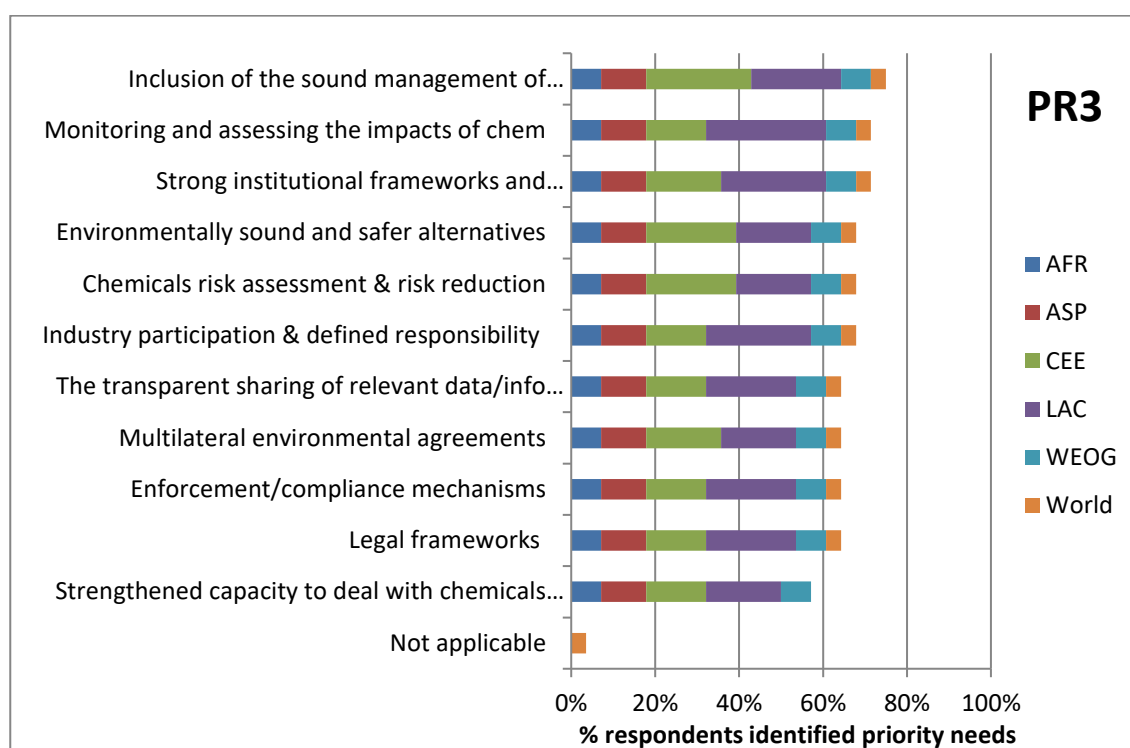


Figure 37 Per cent of respondents identified the priority needs based on the 11 basic elements

115. Even though the total number of poisons centres has not increased, the regional breakdown provided more information on the progress in each WHO region³⁰. As can be observed in figure 38, there has been growth in the number of poisons centres in the Eastern Mediterranean region (by 14 per cent) and a very slight increase in the Africa region (by 2 per cent). Most of the growth in these

³⁰ The number of countries in WHO regional breakdown: Africa (AFR) 47, Americas (AMR) 35, South East Asia (SEAR) 11, European region (EUR) 53, Eastern Mediterranean (EMR) 21 countries, Western Pacific (WPR) 27. More information on the WHO regional groupings can be found on: <http://www.who.int/about/regions/en/>

two regions took place in the period 2014-2016; one new poison centre in the African region and two new centres in the Eastern Mediterranean region were opened.

116. The other WHO regions, including Europe, the Americas and South East Asia observed a small decline in the number of poisons centres by 4, 6, 9 per cent, respectively, since 2010. This is to indicate that two poison centres in the Americas, two centres in Europe, and one in South East Asia region have been closed. The number of the poison centres in the West Pacific region remained unchanged (9 centres) since 2010. Overall, except for Africa (17 per cent) and the Western Pacific region (33 per cent), more than 50 per cent of the countries in the other regions have poison centres up and functioning.

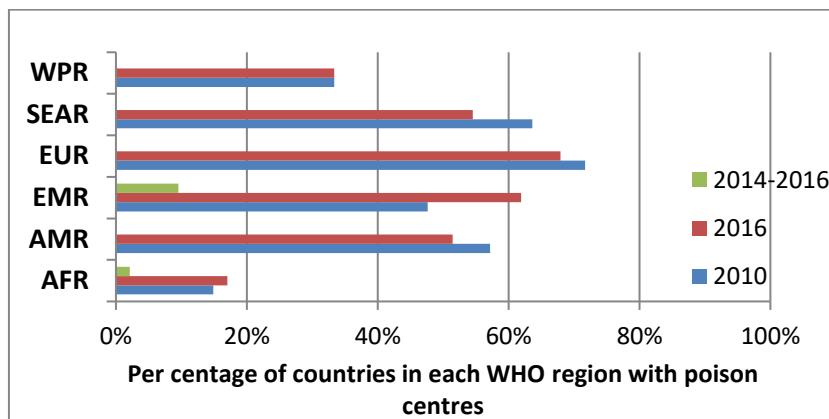


Figure 38 IOMC Indicator C Per cent of countries with poison centres under the WHO regions (WHO)

117. Overall, the indicator 14 of SAICM also achieved below-average level of activity and has not improved since PR1 which stresses the need for more effort in order to advance toward the full conduct in 2020. Prioritization of capacity-building needs was the subject of concern by several QSP trust fund funded projects in this reporting period; a total of 6 in the AFR (2), the ASP (1), the CEE (2) and the LAC (1) regions.

Indicator 15 Development assistance programmes that include sound chemicals management

118. Indicator 15 seeks to identify the countries (and organizations) with development assistance programmes which include the sound management of chemicals (Figures 39, 40). The activity under this indicator were modified by splitting it to two activities in PR3. The First activity asked the donor respondents whether sound chemical management had been included as a priority in their national development assistance funding programmes in 2014-2016 (Figure 39). Only two non-DAC respondents answered affirmatively to this question and the majority of the respondents including the private sector either provided no response or indicated 'Unknown' or 'Not applicable'.

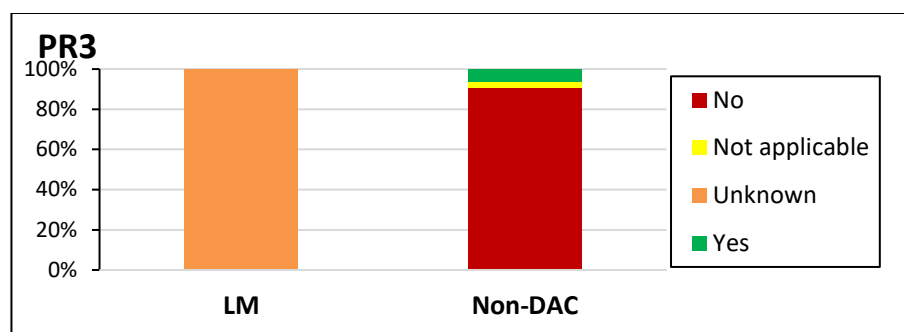


Figure 39 Per cent of donor countries with chemicals management as a priority in national development assistance funding programmes over the 2014 to 2016 period

119. The second activity asked the recipient respondents whether they have a National Development Plan (NDP) and addressing their priority needs for the sound management of chemicals (Figure 40). Non-DAC countries left this activity blank and only one country responded positively which had identified themselves as both donor and recipient country. Another two none-DAC countries indicated that they have a National Development Plan in place, however it did not include the chemicals. Fifty per cent of the recipient respondents included chemicals in their NDPs. Similar to PR2 and PR1, higher proportion of lower middle-income countries (LM), and upper middle-income countries (UM) included chemicals in their NDPs. One out of three LDC countries included chemicals in their NDPs (33 per cent), versus 27 per cent response rate in PR2 for LDC countries (n=11). Nonetheless, the comparison for the LDC group between the two progress reports was not applicable because significantly smaller number of LDC countries participated in this report.

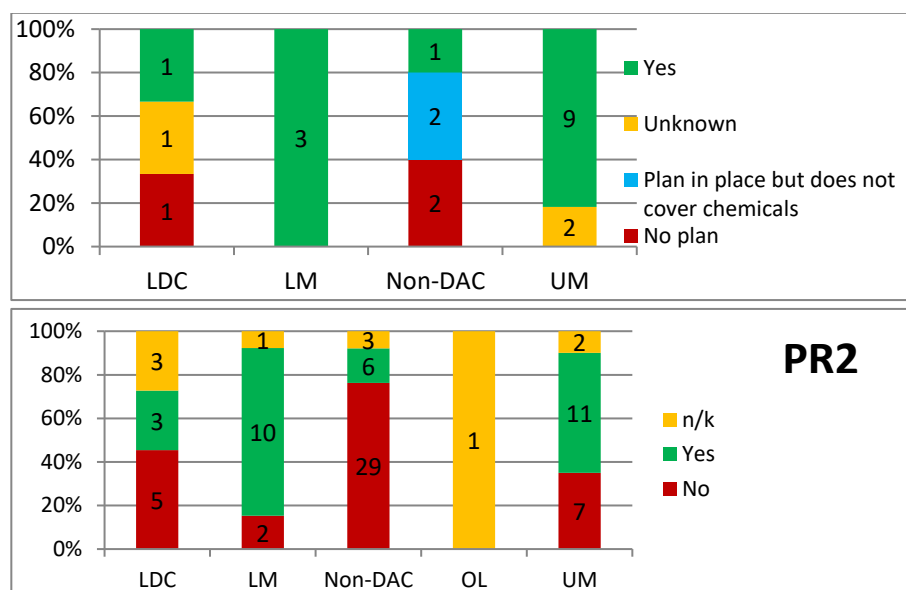


Figure 40 Number of governments with a national development plan and addressing priority needs for the sound management of chemicals; the figure includes only recipient respondents for PR3.

120. With below-average level of activity under this indicator worldwide, there is a large room for advancement in this area. In particular, the overall level of activity has decreased by 17 per cent since PR1 and 16 per cent since PR2.

Indicator 16 Other sources of funding for capacity-building

121. Indicator 16 addresses the numbers of governments (organizations) with capacity building activities supported by other sources of funding (Figures 41, 42). The Global Environment Facility (GEF) was selected by the majority of the respondents; by 86 per cent of the respondents (n=24) which decreased as compared to PR2, in terms of number of respondents; 37 respondents in PR2. According to GEF project database, at least 66 countries had one or more projects approved by the organization in the period 2014-2016. The United Nations and the United Nations agencies as the funding source were selected by 64 per cent of the respondents in PR3 (i.e. 18 respondents), down from 37 respondents in PR2 (Figure 41). Thirty-nine per cent of the respondents benefited from Multilateral Fund for Montreal Protocol. There countries reported to have had projects funded by the World Bank.

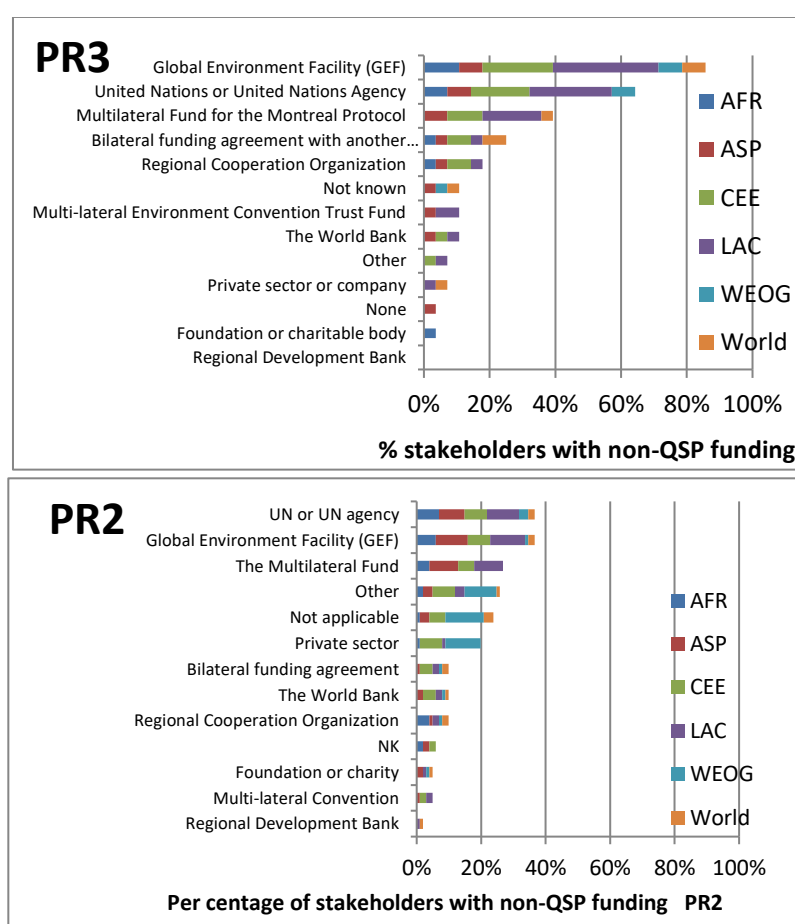


Figure 41 Per cent of respondents accessing non-QSP funding

122. Only three recipient countries (or DAC countries) did not identify any sources of funding shown in figure 42 which also included the selection of options of 'not-known', 'none' or no response at all. Majority of the ASP countries (4 out of 6) reported no access to any of the non-QSP funding sources. Nine and 18 per cent of the countries reported accessing at least one and two sources of funding in PR3, respectively. Whereas, in PR2 20 and 21 per cent reported single and double sources, respectively. The LAC region selected the largest number of funding sources out of all the identified

non-QSP sources. Nine LAC countries had GEF funding, seven countries indicated United Nations Agencies funding, and five countries benefited from Multilateral fund for Montreal Protocol. The CEE region reported on six GEF funded projects and five United Nations Agencies funding.

123. Overall, very small activity was recorded for the indicator 16 of SAICM (score 0.11) with very little to no positive growth over the years once the activity levels were compared with the levels in PR2 and PR1.

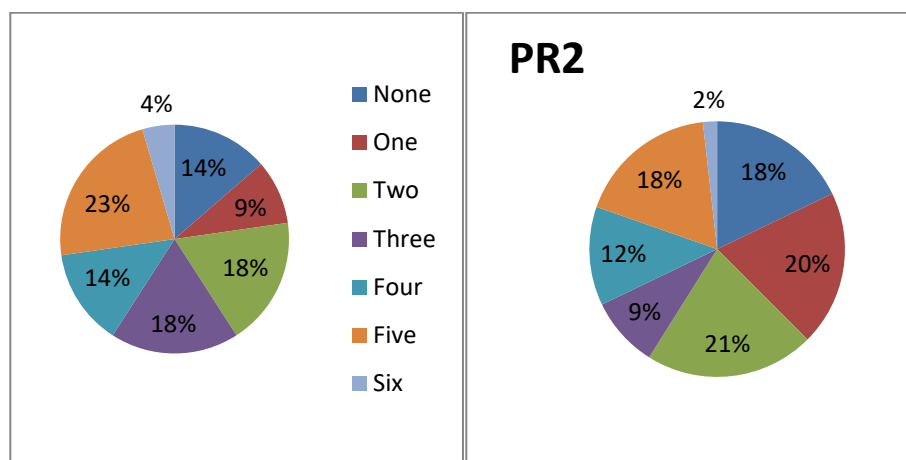


Figure 42 Number of funding sources accessed by all the respondents (except WEOG)

Indicator 17 Number of countries (and organizations) with projects supported by the Strategic Approach's Quick Start Programme Trust Fund (QSP trust fund)

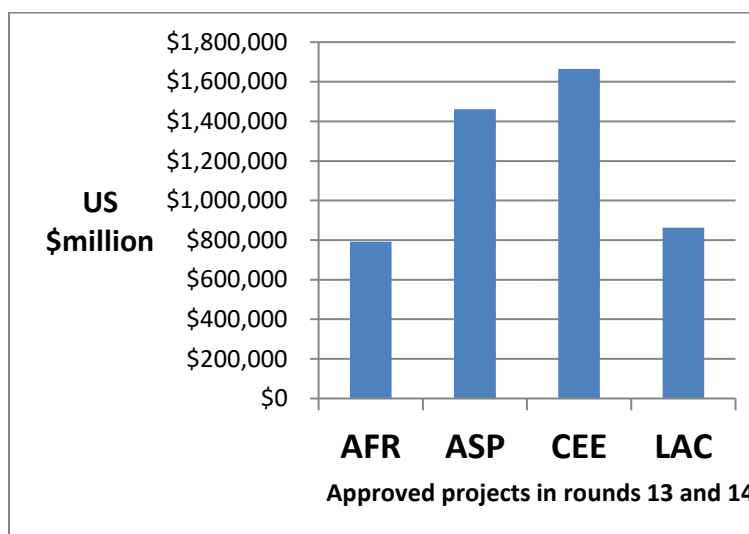


Figure 43 Distribution of QSP funding by region for the approved projects in rounds XIII and XIV

124. Indicator 17 of SAICM addresses the number of projects that were supported by QSP in the period 2014-2016. In rounds XIII-XIV, 22 projects were approved or conditionally approved³¹ worth US\$

³¹ Thirteen projects in round XIII and 4 projects in round XIV received approval or conditional approval without funding. These projects would receive priority funding as the funds become available in the QSP trust fund, providing the conditions for approval have been met as appropriate.

4.78m (Figures 43, 44). During this reporting period (2014-2016) 15 QSP funded projects from the rounds XII-XIV were functioning.³² The total available and approved fund for these 15 projects was worth US\$ 2.76m. The funds were distributed among the regions much more equally than in PR2 (Figure 44A).

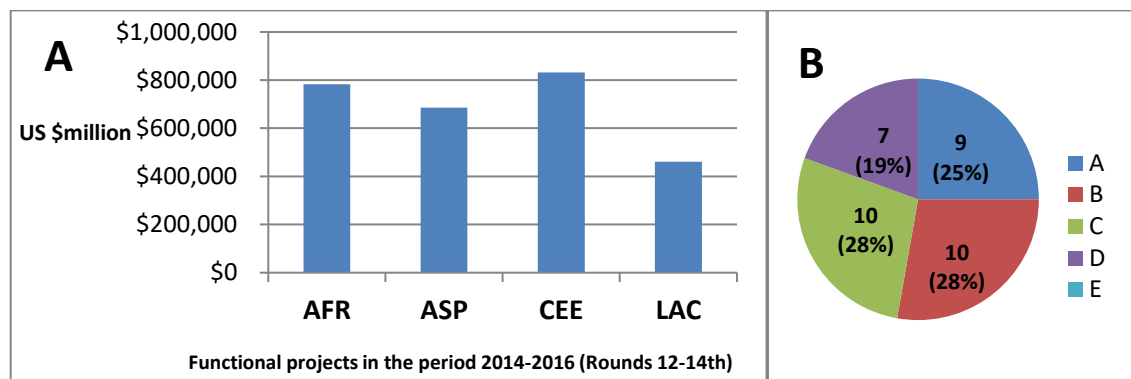


Figure 44 Distribution of QSP funding by region (A) and SAICM objectives (B)³³ for the functional projects in the period 2014-2016 from the rounds XIII-XIV, plus 6 projects in round XII.³⁴

125. The majority of the projects (65 per cent) focused on the SAICM Strategic objectives A, B and C, on the risk reduction, the knowledge and information and the governance (Figure 44B). The objective E on illegal international traffic was not addressed in any of the projects similar to PR2. Many more projects (i.e. seven out of 15) tackled objective D on capacity-building as compared to PR2 with only two projects covering this issue. These three objectives A, B and C were similarly the major focus of the approved projects by QSP in the previous reporting period (2011-2013), however the proportions of projects under each Strategic objective was different. The objective C was covered in the majority of the projects (i.e. 45 per cent) in PR2 as compared to 28 per cent in PR3.

³² Six approved projects from the round XII were funded in the round XIII (value of US\$ 1.79m) upon the availability of the sufficient funds; as a result, the agreements were put in place in 2014 to 2016.

³³ Graph B shows the number of projects under each category and the per centage in brackets (Some projects cover more than one objective).

³⁴ Analysis of the QSP projects provided by the secretariat (see table in Annex 1, derived from regional reports)

Indicator 18 Regional cooperation on sound chemicals management

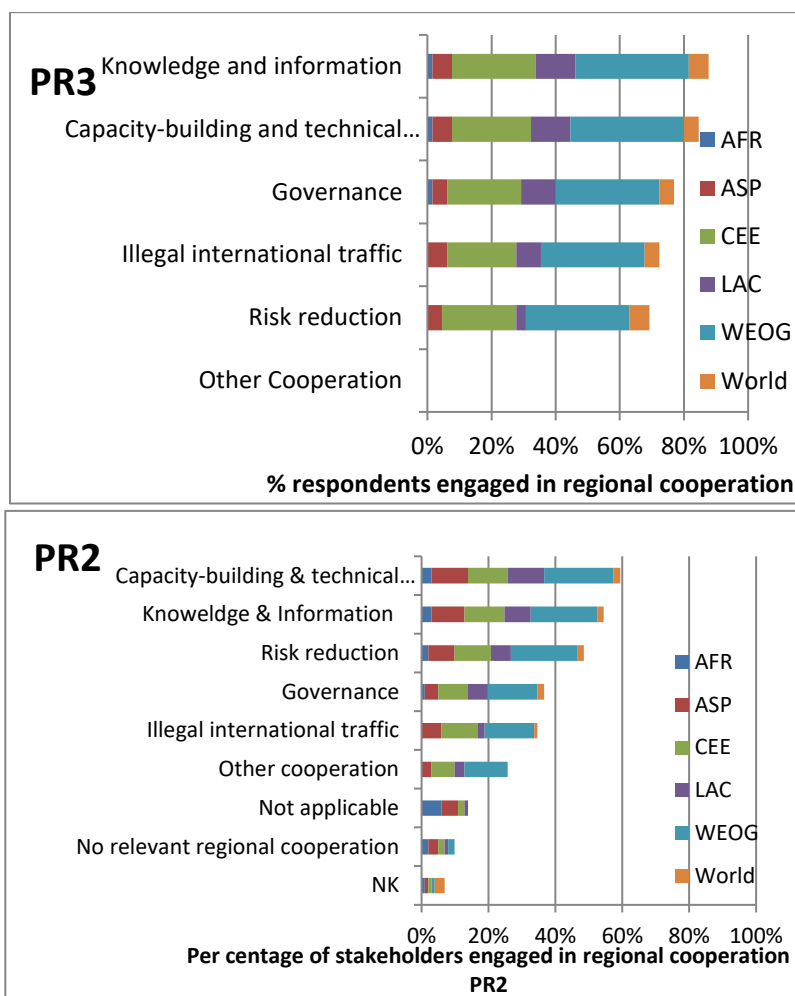


Figure 45 Per cent of respondents engaged in regional cooperation

126. Indicator 18 addresses the number of countries (and organizations) engaged in regional cooperation on issues relating to the sound management of chemicals (Figure 45). The regional cooperation has advanced in this period and about 70 per cent of the respondents selected at least one type of cooperation under indicator 18. The most commonly reported regional cooperation was first on the 'knowledge and information' and second on 'capacity-building and technical cooperation'. The highest level of activity was reported by the WEOG region followed by the CEE region. The LAC and ASP reported this activity with an average response rate of 65 and 58 per cent, respectively. 'Regional cooperation on knowledge and information' was selected by 88 per cent of all the respondents; 57 respondents in PR3 versus 55 respondents in PR2. 'Capacity-building and technical cooperation' received 85 per cent response rate; or 55 respondents in this period versus 60 respondents in PR2. Only one in three AFR respondents reported on regional cooperation in the areas of the 'knowledge and information', 'capacity-building' and 'governance'.
127. The cooperation on 'risk reduction' did not change much since PR2; 45 respondents in PR3 versus 49 respondents in PR2. 'Cooperation on governance' was selected by 77 per cent of the respondents or

50 respondents which was a significant increase as compared to PR2 where 37 respondents selected this activity. 'Cooperation on illegal national trafficking' also significantly improved by 47 respondents having selected this activity whereas 35 respondents did so in PR2. With 67 per cent of the ASP respondents engaging in cooperation on illegal trafficking, made them the most active after CEE and WEOG.

128. Overall, the regional cooperation was amongst the fastest advancing indicators over the years; with a growth of between 10 between PR1 and PR2 and a sharp increase of 34 per cent in this reporting period as compared to PR2. Except for the AFR region, all the rest of the regions had above-average level of activity reported for this indicator.

2.2.5. Objective E Illegal International Traffic

Indicator 19 Illegal traffic in toxic, hazardous and severely restricted chemicals

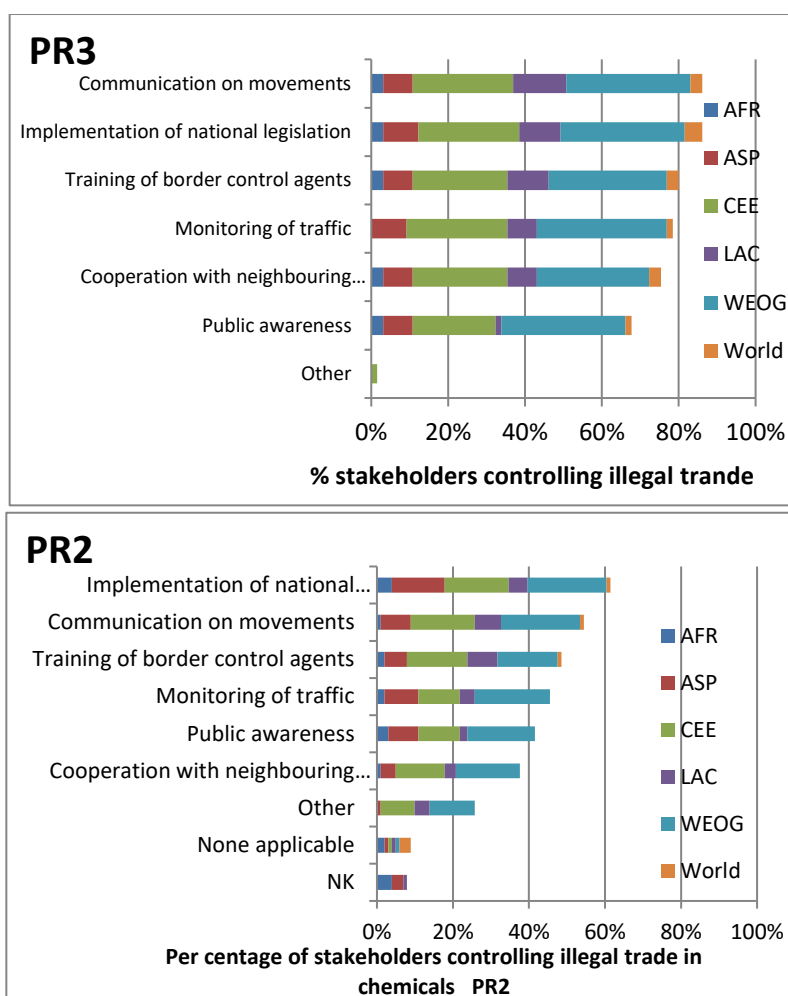


Figure 46 Per cent of respondents controlling illegal trade in chemicals

129. Indicator 19 addresses the progress of stakeholders to prevent illegal traffic in toxic, hazardous and severely restricted chemicals individually (Figures 46, 47). On average, 79 per cent of the respondents

(i.e. nearly 51 respondents) selected one of the available activities to control illegal trafficking which used to be 48 respondents in PR2 (i.e. 47 per cent response rate). The ‘communication on the movement of hazardous chemicals’ and the ‘implementation of national legislation preventing illegal traffic of hazardous chemicals’ were selected by 86 per cent of the respondents, versus 54 and 61 per cent, respectively in PR2. The level of activity in ‘public information and awareness on levels and cases of illegal trade and remedial actions undertaken’ was selected by 44 respondents or 68 per cent response rate versus 42 respondents in PR2. This activity was the least commonly selected mechanism to control illegal trafficking.

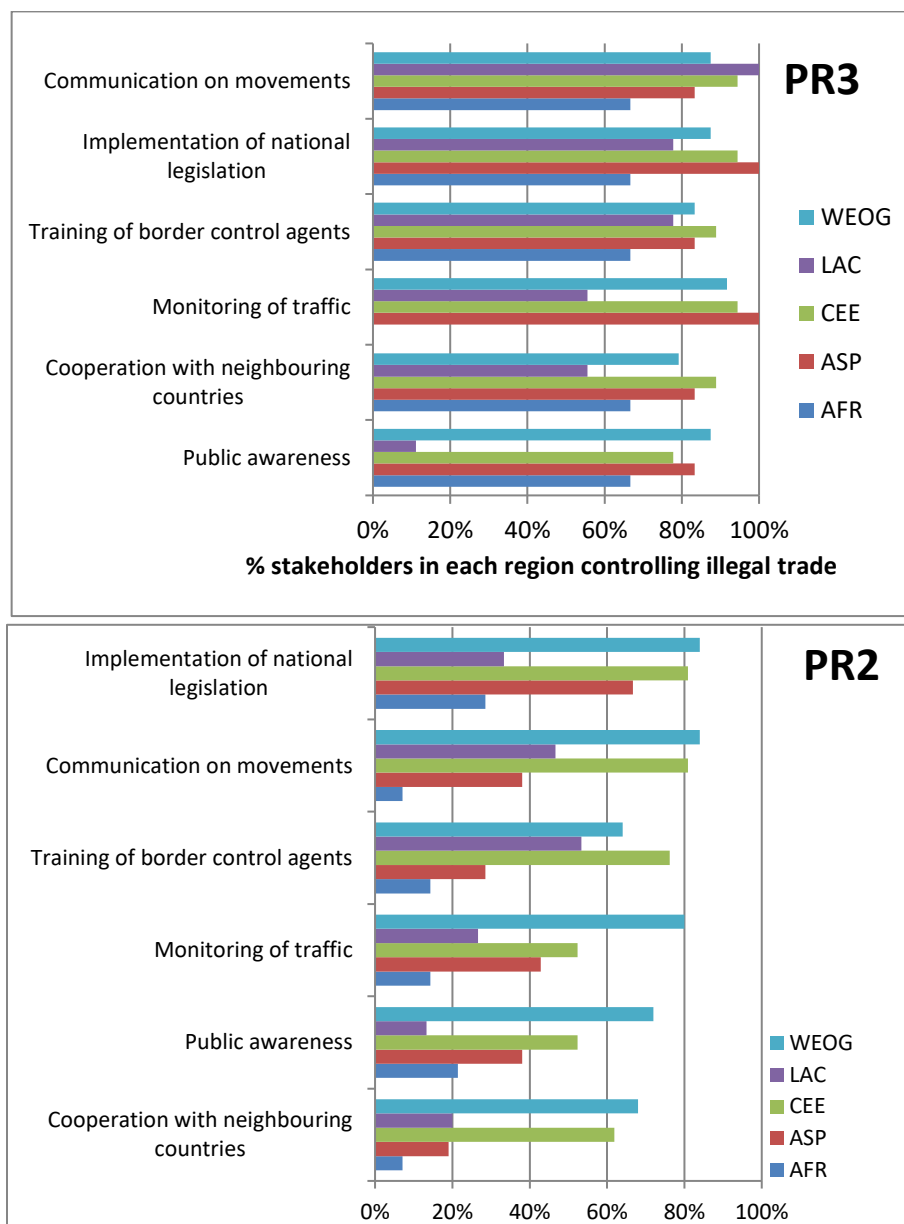


Figure 47 Per cent of each region controlling traffic in hazardous chemicals

130. The ASP region reported the largest response rate under all the mechanisms to control illegal trafficking, on average 83 per cent of respondents selected all the activities as can be observed in figure 47. The high response rate of the ASP region seems to be in agreement with the high level of activity of this region on regional cooperation in illegal trafficking under Indicator 18. The response rate by the WEOG respondents increased slightly (i.e. 20 respondents in PR3 versus 18 respondents in PR) on average under all the specified areas of controlling traffic which on average was smaller than the growth reported by the rest of the regions. The ASP and CEE region demonstrated a large activity in the 'public awareness' in PR3 by 83 per cent (i.e. 5 respondents) and 78 per cent response rate (i.e. 14 respondents). This was slightly higher for the CEE region as compared to PR2 with 11 respondents having selected the 'public awareness'. Eight of ASP respondents had selected this activity in PR2 which was slightly larger than the number of the respondents in this reporting period. The CEE respondents in PR3 gave the highest attention to the 'monitoring of international traffic in hazardous chemicals' (i.e. 17 respondents in PR3 versus 11 respondents in PR2). All the ASP respondents reported on the 'monitoring of traffic' (i.e. 6 respondents), even though 9 respondents from this region in PR2 had selected the same activity. The LAC region has increasingly reported higher activity for all the mechanisms, except for 'public information and awareness' (i.e. only one respondents). All the LAC respondents (100 per cent) selected the 'communication on transboundary movement'; corresponds to 9 respondents in this period versus 7 respondents in PR2. The 'implementation of national legislation' and 'training of border control agents' were selected commonly by 78 per cent of the LAC respondents; this corresponds to 7 respondents in this period versus 5 and 8 respondents respectively choosing national legislation and training of agents in PR2. Two out of three AFR respondents reported on all the activities except for monitoring of traffic.
131. With 39 per cent growth since the PR1, this indicator has benefited from a far above-average level of activity reported by the respondents and more or less an even progress across the regions. Accordingly, the ASP region has reportedly been the most successful in tackling the international traffic of chemicals.

Indicator 20 Illegal international traffic of hazardous waste

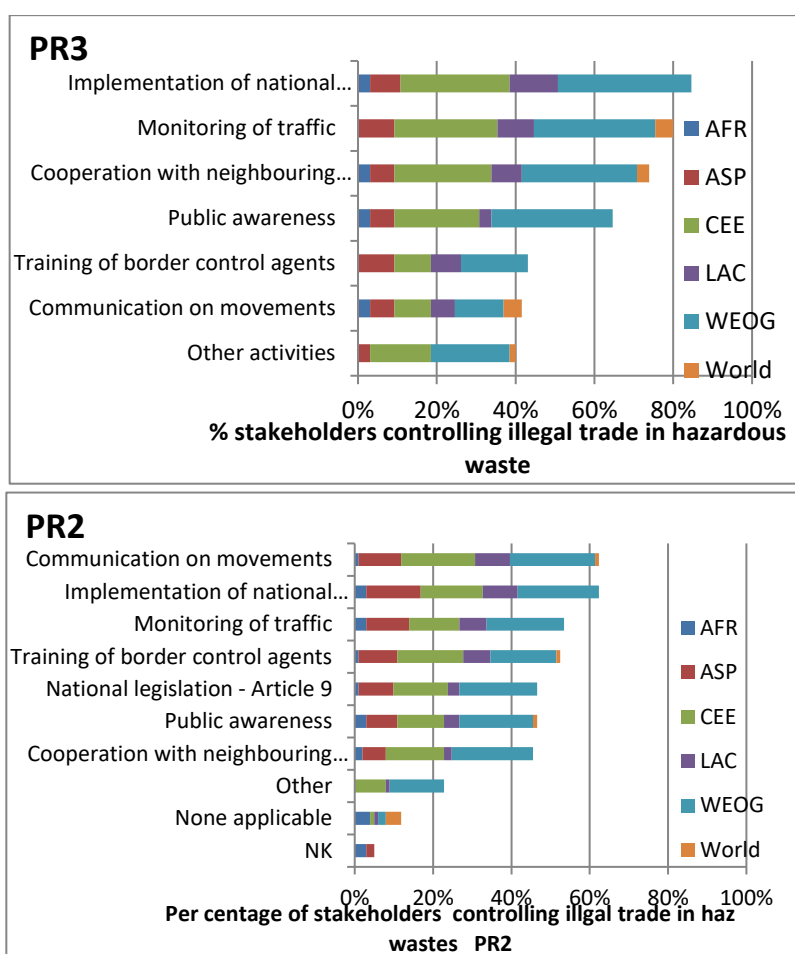


Figure 48 Per cent of respondents controlling illegal trade in hazardous wastes

132. Indicator 20 addresses the number of countries (organizations) with mechanisms to prevent illegal traffic in hazardous waste (Figure 48). Progress in preventing international traffic in waste was slightly behind the indicator 19 on controlling the traffic of hazardous chemicals. Notably, the ‘communication on transboundary movement’ was considerably selected by a smaller number of respondents (i.e. 42 respondents) as compared to PR2 (65 respondents). Moreover, the activity on ‘training the border control agents’ decreased significantly from 53 respondents in PR2 to 27 respondents in PR3. Nonetheless, the majority of respondents reported on the ‘implementation of national legislation’ and ‘monitoring of trafficking of hazardous waste’ by 85 per cent (i.e. 55 respondents) and 80 per cent (i.e. 50 respondents), respectively, whereas 63 and 54 of respondents in PR2 had selected these two activities, respectively.
133. The greatest progress since PR2 was in cooperation with neighboring countries (28 per cent growth). Much of the increase was due to the CEE and WEOG respondents with 89 and 79 per cent of these regions, respectively, reported on this activity.

134. Similar to indicator 19, indicator 20 also observed a constant and significant growth of 27 per cent since PR1 with the ASP region again reportedly being the most successful among the regions combatting the illegal traffic of hazardous waste; similar to indicator 19.

2.3. Global Overview and Comparison with Previous Progress Reports

135. The spider-grams in figure 49 demonstrate the total score of the regions by SAICM objective. The overall level of activity reported by all respondents across all indicators was 0.59 for PR3 which was larger than PR2 (0.47). The 'World'³⁵ category of stakeholders in figure 49 has obtained a larger average score under all objectives as compared to PR2.

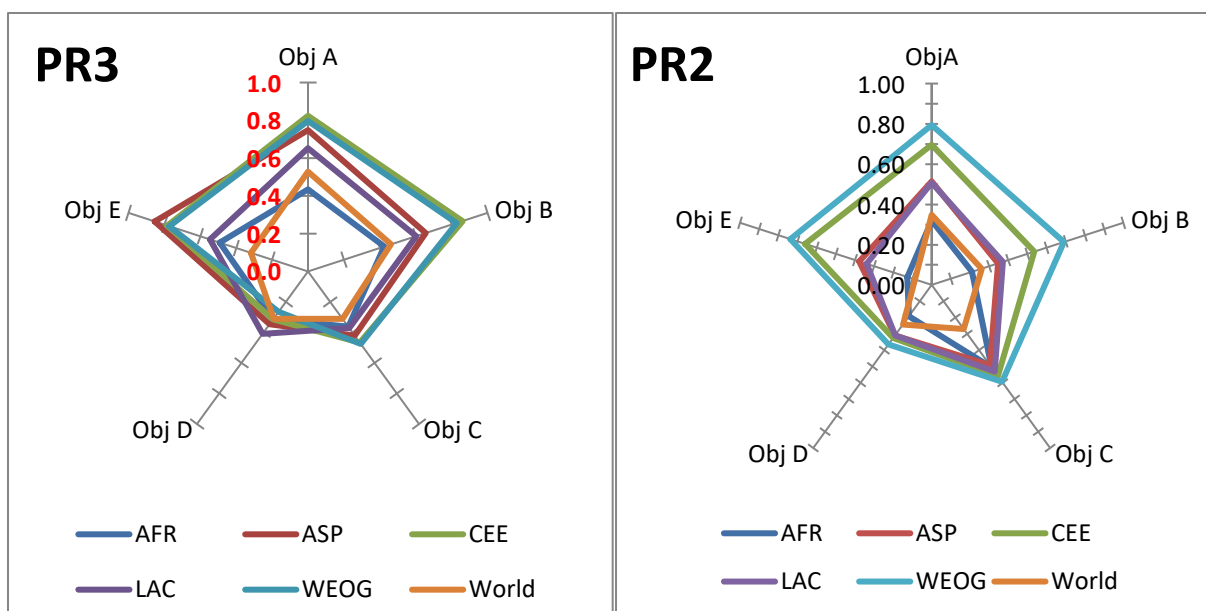


Figure 49 Progress against objectives by region for PR3 and PR2

136. There has been some progress under almost all objectives except for objective C. The total score for objective C ranged between 0.31-0.47 whereas in PR2 it was 0.49-0.59. The largest decrease in score for objective C occurred in the AFR and LAC regions. Similarly, other regions obtained lower scores for objective C as compared to PR2 and PR1 (Figure 50). By a closer look at the indicators under objective C, it was observed that the overall level of activity reported for indicator 11 has decreased by 6 per cent and for indicator 12 has sharply decreased by nearly 40 per cent, as compared to PR2. One reason is likely due to the changes made to the wording of the activities under these two indicators in the online questionnaire in PR3. Indicator 12 in PR3 requested input on the significant changes to the implementation of the chemical instruments. Whereas, this activity in PR2 asked for the presence of a mechanism to implement the instruments. The majority of the respondents left this activity blank which consequently reduced the overall score. The changes made to the activities under indicator 11 requesting input on the type of stakeholders in the non-governmental and

³⁵ 'World' category of stakeholders refers to the global IOMC institutions (OECD, WHO, UNEP, UNITAR, UNDP) which submitted a report to PR3

government (only) committee was left blank by multiple respondents resulting in lower level of activity under this indicator as compared to the previous progress report. Therefore, the decrease in score for this objective may not be comparable to the score from previous reports due to the changes to the questions.

137. The ASP and AFR regions showed a notable increase in scores under majority of the objectives (except for objective C) as compared to PR2. Even though the number of AFR respondents was very limited (n=3) but the respondents reported high activities since PR2. The largest progress took place for objective E for both AFR and ASP regions. In the AFR region, the difference in scores between PR3 and PR1 was not as large as the difference between PR3 and PR2 as can be seen in figure 50, for all the objectives, except for objective C and D. The limited number of respondents in AFR region made comparison among the reports complicated and not quite representative of the status of the region. Thus, drawing a concrete conclusion was not possible.

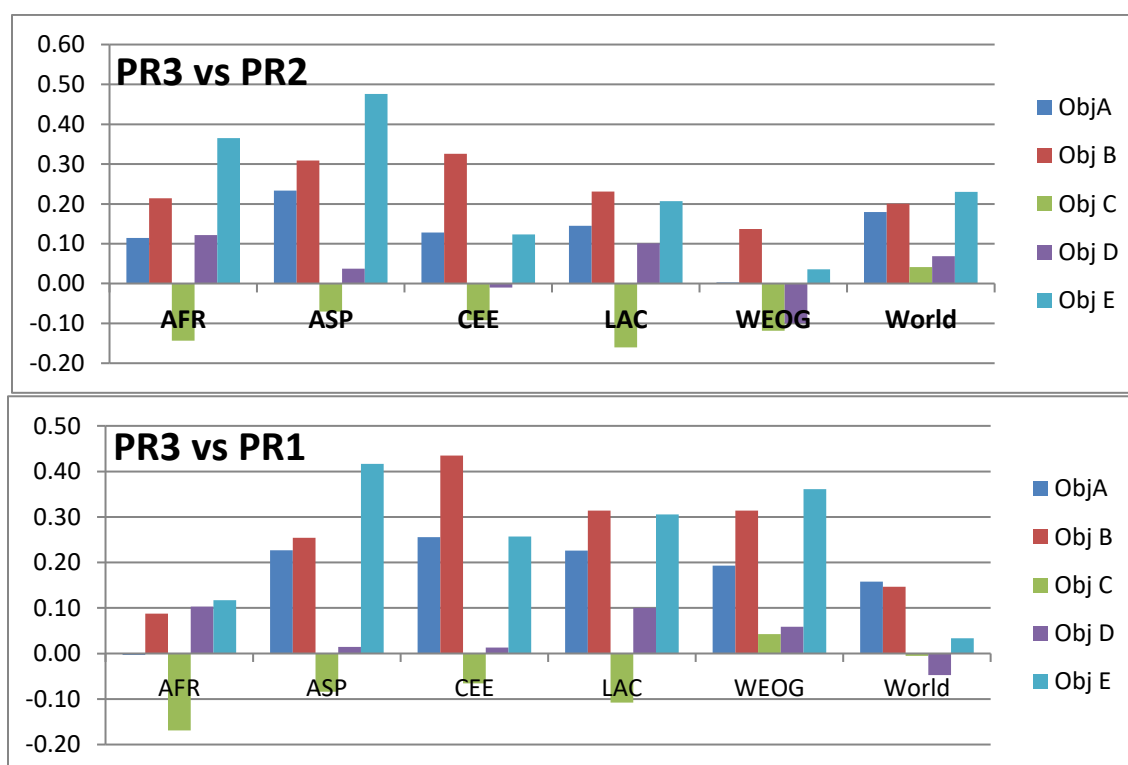


Figure 50 Increase or decrease in scores between PR3 and PR2 (top) and between PR3 and PR1 (bottom) by SAICM regions

138. Reviewing the data in relation to different development categories (Development Assistance Committee (DAC) status)³⁶ showed that there has been a considerable improvement in the score of LDC and UM groups under majority of the objectives. Whereas LM and non-DAC groups have seen a

³⁶ The DAC List of ODA Recipients shows all countries and territories eligible to receive official development assistance (ODA). [The list effective as of 1 January 2015 for reporting on 2014-2016 flow is used in this report.](#) The list consist of lower-middle income countries (LM), upper-middle income countries (UM), the Least Developed Countries (LDCs) and other low-income countries (OM) based on gross national income (GNI) per capita as published by the [World Bank](#), with the exception of G8 members, EU members, and countries with a firm date for entry into the EU.

decline under the objectives C and D since PR2 (Figure 51). Unfortunately, no country from OL group submitted a report to PR3. Only three of the LM countries (out of 36 total) made submissions to PR3, out of which two also submitted a report to PR2. The number of submissions was too small, eight per cent, to be able to reliably compare it with the previous reports. The same was true about the LDC group from which three countries submitted a report to PR3. The LM and LDC group of countries account for more than 43 per cent of all the UN member States and a larger participation by these countries is essential to measure the global progress.

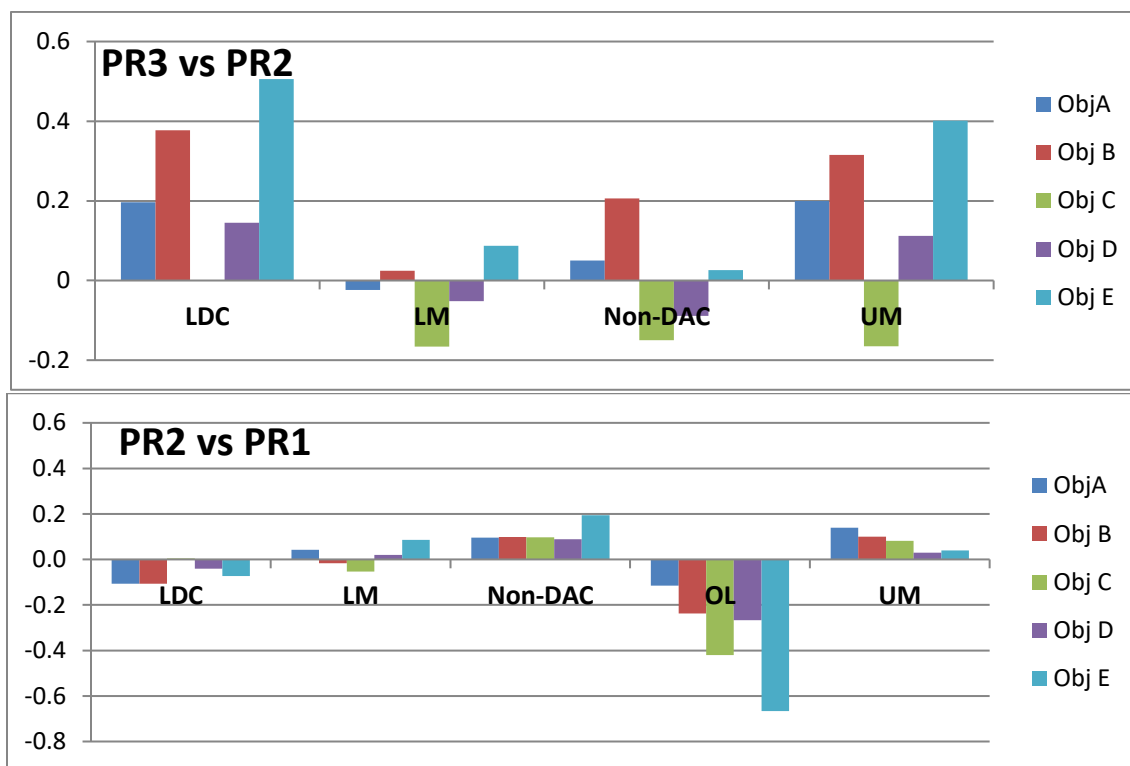


Figure 51 Difference in scores between PR3 and PR2 (above) and between PR2 vs PR1 (below) by DAC category - government only

139. By examining the average per cent of possible options selected by all respondents for each indicator in figure 52, it can be seen that the largest increase, by nearly 36 per cent, in level of activity has been for indicator 9 on the number of websites on chemicals, as compared to PR2. Indicator 18 on regional cooperation on issues relating to the sound management of chemicals came next by a 34 per cent increase, indicator 19 on mechanisms to prevent illegal traffic of chemicals increased by 32 per cent, and 7 on capacity building needs by a 28 per cent growth, as compared to PR2. The largest reduction in the level of activity was seen in the indicators 12, 13 and 15 which were likely due to rephrasing the activities in the questionnaire as compared to PR2, thus, driving a conclusion for these three indicators was difficult.

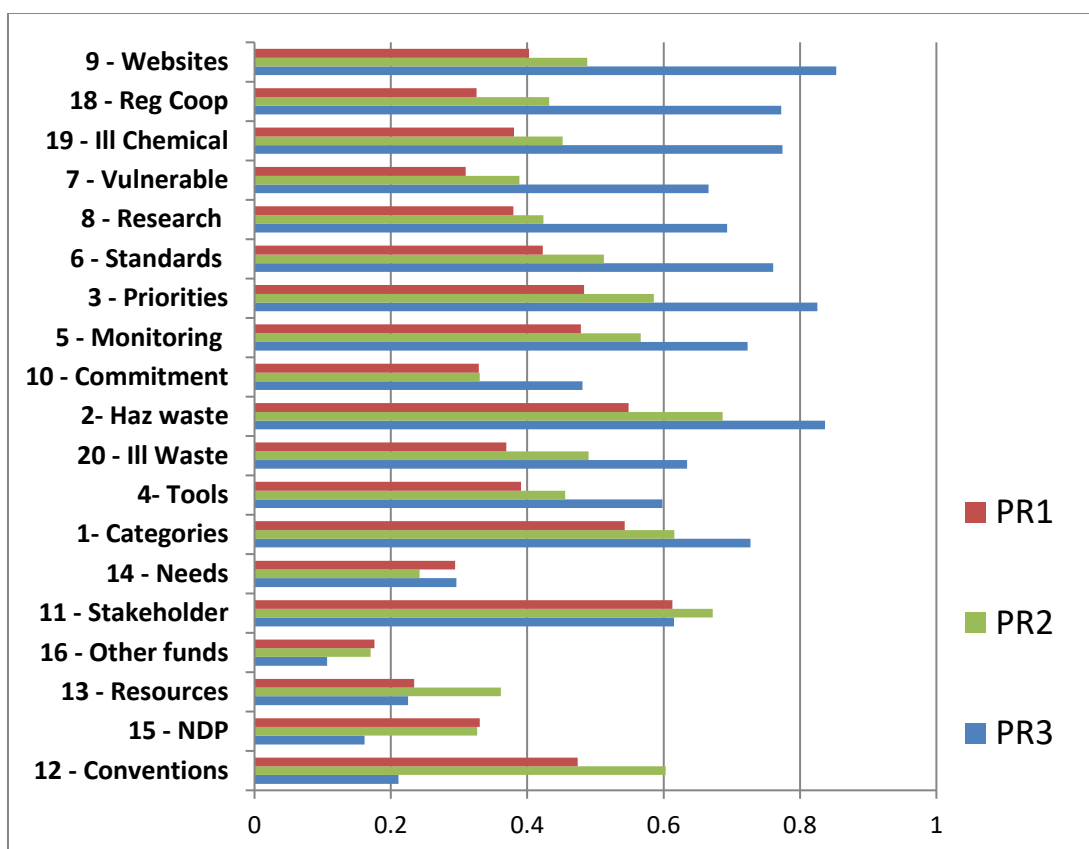


Figure 52 Average per cent of possible options selected by all respondents, by indicator (see Annex 1 for index of full names of indicators)

140. The first nine indicators with highest response rate in PR3 are shown in Table 2. The activities under indicators 1, 2 and 11 were similarly stood on the list of the highest most frequently responded questions in PR2. The list of most commonly selected activities underlined the focus of the stakeholders on objective A. The most commonly selected activities in PR2 were under objective A and C.

Table 2 The indicators (Top nine) reported most commonly by the majority of the respondents in PR3

Indicator	Question and Activity Description	% respondents selecting PR3
11	D2.1.1A The ministries are represented on your government only committee:	
	Environment	100.00%
	Health	100.00%
11	D2.1.2 (b) The interests represented on your multi-stakeholder committee:	
	Environment	93.94%
	Industry	93.94%
10	D1.1 Commitment to SAICM implementation over the 2014 to 2016 period:	
	Attendance at SAICM related meetings	91.30%
11	D2.1.2 (a) The types of stakeholders included on your multi-stakeholder committee:	
	Government	90.91%
2	B2.1. Address the waste management cycle:	
	Prevention/reduction in generation of hazardous waste	95.65%
	Collection and interim storage	89.13%
	Disposal	89.13%
1	B1.1.1 Programme to encourage compliance with mechanisms.	89.13%
7	C2.1. Communicate chemical safety issues to:	
	Workers	89.13%
	The general public	86.96%
1	B1.1. Mechanisms to address key categories of chemicals:	
	Legislation/regulation	86.96%
	Policies	84.78%
	Programmes	89.13%
1	B1.2 Prioritize groups of chemicals for risk management:	
	Persistent organic pollutants	86.96%
	Mercury	86.96%
	Pesticides	86.96%

2.4. Progress on GEF Projects: Number of Countries with Projects Supported by GEF

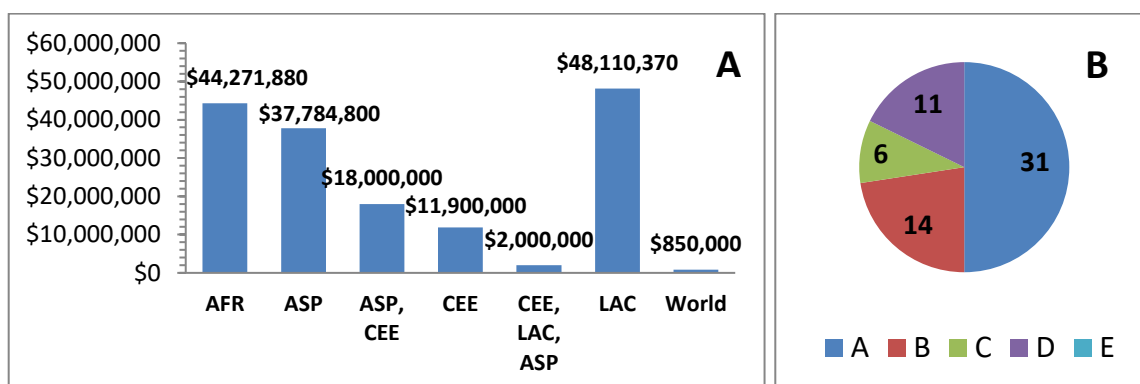


Figure 53 Distribution of GEF funding by region (A) and number of GEF projects by SAICM objectives³⁷ (B); for the approved projects in the period 2014-2016³⁸

141. GEF has approved a total of 31 projects in more than 66 countries across all regions supporting the sound management of chemicals and wastes with a total value of US\$ 163m in the period 2014-2016.³⁹ An analysis of the GEF project database provided the data on the number and value of projects in each region.⁴⁰ Figure 53 shows the distribution of GEF funding by SAICM regions and the number of projects by SAICM Strategic Objectives. The allocated funds and number of projects were evenly distributed except for the CEE region with a relatively smaller number of projects; two projects worth US\$ 11.9m. Moreover, two more projects in the CEE region were jointly implemented in collaboration with the States in the LAC and ASP regions. It is also notable that the majority of projects (i.e. 31) addressed the objective A out of five SAICM Strategic Objectives on the risk reduction of chemicals and wastes. Objectives B and D were addressed in nearly half of the projects (i.e. 14 and 11, respectively).
142. A further analysis of the GEF projects enabled linking the projects to the SAICM the 20 indicators of progress. This data is summarized in Table 3 in a form of a map of GEF activity under the SAICM indicators of progress.

³⁷ The sum is larger than number of approved projects since some projects address more than one SAICM objective.

³⁸ The GEF projects with Approval Fiscal Year falls in the period 2014-2016.

³⁹ Twenty-four of the countries out of 66 had more than one GEF project; in addition, one project in global scale and one project for the Africa were approved in this reporting period.

⁴⁰ The data extracted from the GEF project database: http://www.thegef.org/projects?search_api_views_fulltext=ChemicalPercentage of 20 and Percentage of 20 waste

Table 3 Number of GEF projects in the period 2014-2016 (Approval Fiscal Year) in each region addressing the SAICM indicators

Indicator	1-CATEGORIES	2-HAZWASTE	3-PRIORITIES	4-TOOLS	5-MONITORING	6-STANDARDS	7-VULNERABLE	8-RESEARCH	9-WEBSITES	11-STAKEHOLDERS	12-CONVENTIONS	14-NEEDS	15-NDPs	18-REG COOP	Total projects
AFR	8	6			2		3	1	1	1	2	1		2	8
ASP	8	4	1		3		1				1	2			10
CEE	3	2		1	1	1	2		1		2	1			4
LAC	9	9		1	5		6	1		1		2	2	1	11
World	1														1
Total	29	21	1	2	11	1	12	2	2	2	5	6	2	3	31

3. ANALYSIS OF 20 INDICATORS

143. The SAICM 20 indicators of progress were agreed in 2009 at ICCM2 as a means to monitor the performance of countries in making progress to each of the five Overarching Policy Strategy objectives⁴¹. Indicators of SAICM have been helpful since then to produce a baseline report (2006-2008) and three progress reports including this report; PR1 for 2009-2010, PR2 for 2011-2013 and PR3 for 2014-2016. Addressing all aspects of sound management of chemicals and waste, indicators enabled the secretariat to assess the global and regional progress over time and provided the stakeholders with a framework to set priorities, highlight areas of success, and identify gaps and room for improvements concerning various stages of chemical management.
144. The indicators have proved to be user-friendly, simple and straightforward as equally noted in draft report of the independent evaluation of the Strategic Approach from 2006-2015⁴². The data collected on these indicators were commonly sourced from the SAICM online questionnaire tool which enabled a comparative analysis across three reporting periods. According to the draft report of independent evaluation, 59 per cent of respondents considered that indicators of progress had been very effective or had had some effect in assessing progress towards the sound management of chemicals and waste.
145. The experience in using the indicators has marked the strengths of the regions under certain indicators. It has also shown that the regions have implemented the indicators with varying pace according to their set of priorities. Furthermore, certain indicators and their respective activities in the questionnaire are applicable to the government stakeholders and less to the non-government stakeholders. Whereas, some other indicators better reflect the success of non-government stakeholders; for instance, NGOs are particularly effective at reaching more vulnerable groups under indicator 7. In addition, according to the draft report of independent evaluation of SAICM, there were challenges in integrating the contributions of non-government stakeholders due to stakeholders' own surveys and reports that were not fully reflected in the on-line submissions. These challenges raised the question as to whether the on-line survey should be restricted to government national focal points with non-government stakeholders' information presented as complementary information. Stakeholders may wish to explore ways to amend the activities so that they can better measure the activities and projects undertaken by the private sector and NGOs so that the progress report could better reflect their contributions.
146. Certain concerns remain related to the effectiveness of the indicators as was also discussed in the previous progress report (i.e. PR2). The activity-based indicators are subjective by nature therefore they are prone to interpretation and even misunderstanding by the respondents which may result in under- or over-reporting of the progress under certain indicators. The online questionnaire in the form of a questionnaire is long and time-consuming to complete, even though it is comprehensive in collecting the stakeholder data on the indicators, which has likely contributed to the fall of

⁴¹ SAICM/ICCM.3/INF/5 paragraph 15

⁴² SAICM/IP.2/4

- submission rates over the years. Several stakeholders started but did not finish the questionnaire. Another challenge includes, inconsistent reporting across all countries over the reporting periods.
147. Moreover, a positive correlation was observed between the area of focus of projects (i.e. Strategic Objectives covered) financed by the GEF and QSP trust fund and the positive growth under certain indicators. This result urges the importance of sufficient funding and resources in achieving the milestones under each indicator.
148. The achievement of 2020 goal is assumed to be correlated with having all the stakeholders conducting all the activities. However, the current data on the activity-based indicators which is collected through online questionnaire tool over the past several years indicate that a bit more than half of the activities are conducted. Thus, meeting the full conduct of indicators by 2020 based on the aforementioned assumption by most of the countries proves to be a challenge in the remaining time until 2020.
149. The second progress report in Strategic Approach implementation noted the experience with indicators of progress that the activity-based indicators are not able to quantify the effect of chemicals on the human and the environment and encourages to supplement the data with objectively verifiable result-based indicators.
- “The questionnaire’s multiple-choice responses seem to underline the need to supplement the activity-based indicators with objectively verifiable results-based indicators which can quantify reductions in health and environmental impacts of chemical use, in line with the Johannesburg targets, and the steps taken towards this. The process of collecting basic data and evidence (e.g. on poisoning or chemicals management expenditures) is an essential step toward mainstreaming of national chemical management. Maximising links with existing data sources could minimize duplication and reporting burdens, and a step-wise approach to introducing such indicators could be developed based on prioritization of activities.”⁴³
150. In analysis of SAICM indicators and the room for development of objectively verifiable result-based indicators, it is useful to reflect upon the lessons learned in other areas. For example, the Biodiversity Indicators Partnership (BIP) during the development and use of indicators to measure progress in achieving all the Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011-2020.⁴⁴ BIP recommends setting specific, measurable, ambitious, realistic, time-bound targets which provides a firm foundation for indicator use and development. The Biodiversity Indicator Development Framework promotes an iterative process of defining targets and identifying indicators; with the identification of potential indicators helping to refine the measurability of targets:
- “While it is important to build on what already exists, the lack of a known existing indicator should not limit target setting. Indicators should be used together to support one another, and to produce integrated storylines. The collection and collation of data, maintenance of databases and production of indicators is a resource-intensive process, requiring continual funding. Experience has shown that global targets are often translated

⁴³ SAICM/OEWG.2/INF/4

⁴⁴ CBD/COP/14/INF/40

into very different targets at the national level due to differing contexts and priorities, requiring different indicators. Thus, the uptake of global indicators at the national scale is limited.”

151. The indicators of progress at their current status do not fully capture the new or emerging policy issues. According to the draft report of independent evaluation of SAICM, the stakeholders expressed concerns that extending the application of the indicators to the emerging policy issues could cause further challenges.
152. Since the indicators were adopted, the overall orientation and guidance has been developed and endorsed at the fourth meeting of the International Conference in Chemical Management (ICCM4) in 2015 which aims to provide direction and identify approaches for all Strategic Approach stakeholders towards facilitating the achievement of the 2020 goal of sound chemicals management, including introducing eleven basic elements required at the national and regional level to achieve sound chemicals management to support the implementation of the Overarching Policy Strategy⁴⁵. The detailed discussion in the summary report on progress in the implementation of the Strategic Approach for the period 2011-2013⁴⁶ made a comparative study between these eleven basic elements and 20 indicators and highlighted that most of the indicators are closely related to the basic elements identified in the overall orientation and guidance document towards the achievement of the 2020 goal of sound chemicals management.
153. Furthermore, chemicals and waste management are embedded within many of the Sustainable Development Goals (SDGs). A proposal on objectives and related milestones, based on the eleven basic elements and the 2030 Agenda for Sustainable Development, was prepared for the second meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste⁴⁷. The proposed objectives were grouped around four key areas: (a) legal and institutional frameworks, implementation and enforcement; (b) stakeholder participation and sectoral engagement; (c) knowledge and information, risk assessment/reduction and monitoring; (d) political leadership, outreach, education and promotion. For each of the proposed objectives, a limited number of more specific targets or milestones were developed and the links to SDGs were explored. The proposal indicated that the objectives and related milestones are intended to provide a practical program of work that is measurable, that makes and tracks progress toward achieving the eventual vision for beyond 2020.
154. The SDGs, as a more recent development, are helping to understand the global situation in regard to sound management of chemicals and waste. The SDGs also provide a broader framework for the industries, businesses and consumers to contribute to sound management of chemicals and reduction of waste as chemicals and waste are embedded in the SDG 12 on sustainable consumption and production. The SDGs also allow for broader considerations of human health, environment, agriculture, labour and gender.
155. The weaknesses of the current indicators of progress were clearly identified by one EU/JUSSCANNZ national focal point which is highlighted in the draft report of independent evaluation of SAICM:

⁴⁵ Overall orientation and guidance document for achieving the 2020 goal of sound management of chemicals

⁴⁶ SAICM/ICCM.4/3

⁴⁷ SAICM/IP.2/8

“The challenge with the usefulness of the indicators is two-fold: 1) there has historically been lack of reporting and therefore it is a significant challenge in doing any trend analysis and 2) simply measuring the number of countries (for example engaged in regional activities in chemicals or that have made a commitment to SAICM) does not demonstrate the effectiveness of the actions undertaken – SAICM national focal point.”

156. In summary, the indicators of progress are comprehensive and thus are necessary and useful. Yet, at their current state they are not the most effective means of assessing the progress toward the sound management of chemicals and waste beyond 2020.
157. As concluded in the draft report of independent evaluation, SAICM stakeholders shared the view that there was a need to continue to monitor these indicators until 2020, stating that “Nevertheless, retaining the existing 20 indicators of progress to 2020 is appropriate given the baseline that has been developed and useful insights are gained when comparing results over different time periods. Some regions have produced detailed reports on progress made towards the 20 indicators.”

4. DISCUSSION AND CONCLUSIONS

158. The global reporting rate of 28 per cent shows a significant decline as compared to the previous reports (PR2, PR1). Between 6 to 70 per cent decrease in reporting rate across regions as compared to PR2 marks the need for more consistent participation by the stakeholders. Drawing a reliable global picture of the progress is only possible when adequate data is available and / or collected across all the regions and the countries consistently report on the changes and/or improvements in every reporting cycle. Nevertheless, there is consistent progress under certain indicators corroborating the Governments engagement in developing programmes and mechanisms for the sound management of chemicals.
159. There is a significant variation in response rate among regions in this reporting period. Six per cent of submitted reports were from the AFR region (i.e. three respondents) while 28 per cent of all the member States are in this region. The WEOG and CEE regions represent 16 and 12 per cent of all the member States, respectively, whereas, 37 and 31 per cent of the submitted reports to PR3 were from these two regions, respectively. The absence of sufficient data for the AFR region makes it impossible to measure the progress of the region. As a result, the overall score calculated for the objectives will be influenced by highly represented countries in this report (i.e. WEOG, CEE) rather than providing a solid status of the global advancement in management of chemicals and waste.
160. In comparing the data from the second and first reporting periods, the overall gap between countries in different development categories (i.e. DAC status) seemed to be widening rather than narrowing, with the increases in levels of activity reported by developed and upper middle-income countries contrasting with reductions or no change in the least developed countries. Nevertheless, this trend in data cannot be concluded consistently in this reporting period. This could be attributed to the below average level of activity under objectives C, and D by non-DAC countries which has resulted in lower overall scores by these countries. In addition, the number of submissions by the least developed countries and lower middle-income was very limited and also the least developed countries reported a high level of activity under nearly all the objectives which overall makes it

difficult to compare with previous reports and draw a conclusion on the existing gaps in different development categories.

161. This report for the first time included the data by the IOMC on their eight indicators of progress in the implementation of Strategic Approach and the analysis of interlinkages with the 20 indicators of SAICM. Having IOMC data included in the report showed to be of value to (a) complement or cross-reference the data collected through the SAICM questionnaire; (b) give a better picture of the global progress toward the sound management of chemicals under some of the SAICM key indicators of progress. The provision of IOMC indicators in this report helps to reflect and explore the possibility to extend the data that could be collected through IOMC. Notably, IOMC is in the process of developing a new indicator on the number of countries that have legislation in place to manage industrial and consumer chemicals (SAICM/OEWG.3/INF/18 - Proposal by the Organisation for Economic Co-operation and Development (OECD) for a new Inter-Organization Programme for the Sound Management of Chemicals (IOMC) indicator for measuring progress with the sound management of chemicals and waste), i.e. chemicals which are not covered by specific legislations such as pesticides or pharmaceuticals⁴⁸. This indicator would be of significance, given that the SAICM indicators do not specifically address industrial and consumer chemicals. In addition, the ILO Conventions linked to the chemical management that are currently covered under indicator 12 of SAICM can be potentially developed as additional IOMC indicators in future.
162. The highest level of activity recorded among IOMC indicators was under the indicator H for Basel and Stockholm Conventions each with 180 ratifications. Furthermore, indicator E, on the pesticide legislation based on the FAO/WHO International Code of Conduct reported a high level of activity with 174-member States (89 per cent) having implemented the legislation as of 2017.
163. Furthermore, an analysis of the projects on chemicals and waste approved by GEF in the period 2014-2016 was included for the first time in this reporting period. The GEF activity map provides a good visualization of the current projects and their area of focus by linking the GEF projects to the relevant SAICM indicators of progress.

4.1. Regional Progress

164. The greatest progress since PR1 was recorded for the objective B on knowledge and information and on the objective E, on illegal international traffic across all the regions. The advancements under these two objectives become clearer once compared over time. Comparing the data with those of PR1, the AFR region had the smallest (12 per cent) and ASP had the largest growth (42 per cent) in controlling illegal traffic. The CEE and LAC showed a consistent growth over years; 12 and 21 per cent growth since PR2, respectively. The progress of these two regions was even larger when compared with PR1; 26 and 31 per cent increase for CEE and LAC regions, respectively. Notably, the projects approved by two funding mechanisms of GEF and QSP majorly involved the objectives A and B whereas, no approved project by either of the agencies addressed the objective E on illegal

⁴⁸ "Industrial" chemicals are defined by default as all chemicals that are not managed through legislations dedicated to specific uses, such as pharmaceuticals, pesticides, biocides etc. It also covers consumer uses (such as the use of paints) that are not managed by specialized legislations. To avoid the impression that industrial chemicals are chemicals that are only used in industrial settings, they are called "industrial and consumer chemicals".

international traffic. As for the objective B, the CEE region also reported the largest growth since the first progress report (PR1) by 43 per cent. The LAC and WEOG regions stood next equally by reporting a 31 per cent increase in the level of activities since PR1. The AFR region demonstrated the smallest growth of 9 per cent since PR1 under objective B.

165. Three countries from the AFR region submitted a report to PR3 and they demonstrated progress under all objectives except for Objective C, on governance as compared to PR2. The AFR region showed the largest advancement under objective E (36 per cent increase) followed by Objective B (11 per cent increase), comparing the data from the PR3 with that of PR2. The AFR region has reported below-average level of activity under majority of the indicators with a smaller growth as compared to the other four regions over the years. However, it is very important to note that the number of AFR respondents has sharply dropped since the two previous reports. The slower than average progress could have been majorly affected by the small pool of data rather than a true indication of the progress of the region.
166. The ASP region has shown the highest activity under the objective A with the score of 0.75 after the objective E (score 0.85). This objective is an obvious strength of the ASP region obtaining one of the largest scores among all the regions and objectives since PR1. The ASP region showed the least level of activity under objective D, on capacity-building and technical cooperation, as compared to other four objectives in this reporting period. Very few respondents in this region selected the National Development plans (indicator 15) and the other sources of funding (rather than QSP) in indicator 16 which both contributed to a lower average score for this objective. This region similar to other regions showed a decline in the level of activities under objective C as compared to the previous progress reports. Notably, out of 10 approved projects by GEF in the ASP region, only two involved objective D whereas they all addressed objective A.
167. The CEE region showed a positive growth of at least 26 per cent under the objectives A, B and E since PR1. Except for the objective C with a decline in the level of activity (7 per cent decrease) and objective D with nearly no growth since PR1. The highest score was 0.86 under objective B which was also the one single highest score obtained under all the objectives across all the six regions. The CEE region also reported a significant advancement under objective A with an average score of 0.82; slightly behind the objective B. A few of GEF projects were in the CEE region (i.e. 4 out of 31) all of which mainly concentrated on the risk reduction of the chemicals (Objective A).
168. The LAC region also prioritized the objective A (score 0.65) over other objectives. Nevertheless, with an average score of 0.52, the rest of the objectives are not very far from the objective A. Again, the objective C by 11 per cent decline was the only objective that did not improve since PR1 in the LAC region. The LAC region had a positive growth of at least 10 to 31 per cent since PR1 under all objectives except for objective C.
169. The WEOG region has reported a decline in the level of activities under the objectives C and D as compared to PR2. The region also demonstrated very small growth as compared to the previous reporting period (PR2) under the rest of objectives; except for objective B with 14 per cent increase as compared to PR2. Nevertheless, there is a positive growth if the level of activities is compared with the corresponding values in PR1 across all the objectives. In general, the WEOG region has reported above-average level of activity under nearly all the objectives since PR2 except for objective D on capacity-building and technical cooperation.

170. The objective C did not show much of progress across all regions in this reporting period once compared to PR2 and PR1 except for the small positive progress of 4 per cent reported by the WEOG. Even though in PR2 the CEE, LAC and WEOG regions reported a positive progress under objective C as compared to PR1, this positive growth was not only sustained in PR3, but also the level of activity diminished to lower values than those of PR1. It could be due to a large number of the respondents from PR2 who did not submit a report to PR3 or the modifications to the phrasing of the activities in the online questionnaire in regard to the multi-stakeholder mechanisms, and significant changes to the implementation of the key international instruments, which have partially affected the activity levels reported by the respondents.
171. The funding mechanisms of GEF and QSP aimed to assist the Governments with the initial capacity building and institutional strengthening toward the implementation of SAICM objectives and the sound management of chemicals and waste. It can be envisaged that there is a positive correlation between the focus of the funded projects by the GEF and QSP and the major progress that is recorded under objective A and B. A total of 15 QSP funded projects from the rounds XII-XIV were functional in this reporting period out of which 10 projects addressed objective B, and C equally and nine involved objective A. Out of 31 approved GEF projects in the period 2014-2016 in more than 66 countries and across four regions of AFR, ASP, CEE and LAC, without exception all the projects pledged to address the objective A or risk reduction of chemicals. Fourteen projects dealt with objective B and 11 projects worked on objective D.
172. Regardless of variations in the scores of objectives among the regions, once an average of the scores of all objectives for each region is calculated, the differences are narrow with the overall score of 0.4 for the AFR, 0.52 for the LAC, 0.6 for the ASP region, 0.63 for the WEOG, and 0.65 for the CEE. With slightly more than half of the activities being addressed and implemented globally, there is room for much concerted effort to achieve full implementation of the Strategic Approach globally.

4.2. Overall Progress on the Indicators

173. Some modifications were applied to the activities in the questionnaire and in certain cases resulted in a lower level of activity reported by the respondents as compared to PR2 and PR1. These modifications included: the significant changes made to the implementation of the international instruments in indicator 12; technical assistance by donor countries (organizations) was removed from indicator 13; development assistance programmes in indicator 15 was split to two activities; first, whether sound chemical management had been included in the development assistance programmes in 2014-2016 and second, to find countries with the National Development Plan (NDP) and addressing their priority needs for the sound management of chemicals.
174. In addition, there were multiple new activities added to the questionnaire in this reporting period including; one activity on the mechanisms (Legislation, regulations, policies, etc.) to address key categories of chemicals and another activity on the programmes to enforce or encourage compliance with these mechanisms added to indicator 1 on key categories of chemicals; significant changes made to the hazardous waste management in the period 2014-2016 was added to indicator 2; the activity on pre- or post-market science-based assessment of the key priorities for risk reduction was added to indicator 3; significant changes or new developments made to the monitoring activities in

the period 2014-2016 was added to the indicator 5; increase or update in the amount of chemical safety information available through websites or other channels of public information was added to indicator 9; two-parts activity on the organizations (not the Governments) who have multi-stakeholders or multi-sectoral committees and the types of these stakeholders (i.e. Academia, civil society, industry, etc) were added to indicator 11; identify the priority needs based on the 11 basic elements from the Orientation and Guidance Document was added to indicator 14 on capacity-building needs.

175. The highest average score across all the regions and stakeholders was obtained for indicator 9 on the websites to provide information to stakeholders (Score 0.85), indicator 2 on hazardous waste management (Score 0.84), indicator 3 on priorities for risk reduction (Score 0.83), indicator 19 on mechanisms to prevent illegal traffic in hazardous waste (Score 0.77) and indicator 18 on regional cooperation on issues related to the sound management of chemicals (Score 0.77).
176. Only seven out of 20 indicators of progress (i.e. indicators 6, 9, 10, 11, 12, 14, and 17) were assessed quantitatively in the baseline report. The progress under indicator 6 on conformity with GHS since the baseline report in 2006-2008 came to a light when compared with the indicator H of IOMC. Sixty-five Governments complied with GHS according to indicator H as of 2017 which was equal to the number estimated in the SAICM baseline report in 2008. Even though multiple Governments joined the full compliance with GHS between 2008 and 2017, there was no clear improvement above what SAICM baseline report had already estimated in 2008. This estimation in the SAICM baseline report included a large number of countries which were only in the process of implementing GHS in certain areas of chemical management therefore, already taking into account those who completed this activity after 2008.
177. Indicator 9 in the baseline report mainly addressed the number of countries with PRTRs whereas in PR3 this indicator tracked the countries with websites that provide information on variety of chemical safety topics. Indicator 10 on implementation of Strategic Approach was perhaps among the indicators with largest progress since the baseline report where only 14 Governments were in the process of development of National Strategic Approach Implementation Plan. In the period 2014-2016, another 15 stakeholders (23 per cent of the respondents) published a SAICM implementation plan. This number was smaller than the 24 new submissions of SAICM implementation plans in the period 2011-2013, yet it demonstrated a continuous improvement over the years. In 2010, there were 164 national focal points which grew to 181 focal points in 2016, 5 new focal points in the period 2014-2016. As of 2016, 95 per cent of the respondents to the questionnaire regularly attended the SAICM related meetings and more than 90 per cent actively engaged in SAICM activities.
178. Drawing a conclusion on the progress of indicator 11 on multi-stakeholder coordinating mechanism and indicator 12 on key international instruments since the baseline report was difficult, given the modifications that were made to the activities under these two indicators. Indicator 14 of the baseline report addressed the capacity-building needs of the countries by focusing on publicly available plans of UNITAR National Chemicals Management Profile and of a Stockholm Convention National Implementation Plan. According to indicator A of IOMC indicators of progress, 116 countries had up-to-date UNITAR National Profiles as of 2016. This value was 102 National Profiles according to SAICM baseline report which shows about nine per cent growth. Indicator 14 in PR3 also included

- the National SAICM Implementation Plan and the National Environmental Health Action Plan as well as the priority needs based on the 11 basic elements from the Orientation and Guidance Document.
179. Under indicator 17 on QSP trust fund projects, 15 projects in 15 countries started in the period 2014-2016 thanks to the funding by QSP trust fund. Up until the end of this reporting period (2014-2016), the QSP trust fund has approved and funded 184 projects (i.e. 171 in-progress or completed) spanning across 14 application rounds distributing relatively evenly across all regions since its establishment. Having received 42 proposals for the 13th round and 19 proposals for the 14th round, this funding programme maintained its appeal throughout the years.
 180. The majority of projects funded by the GEF and QSP assistance mechanisms addressed SAICM objectives A, B and C on risk reduction, knowledge and information and governance, respectively. All the indicators under objectives A and B demonstrated a far above-average level of activity in this reporting period. A closer look reveals that the considerable progress was made under indicator 1 on key categories of chemicals and indicator 2 on hazardous waste management both of which were heavily funded by both GEF (29 projects on indicator 1 and 21 on indicator 2). A relatively more homogenous distribution of QSP funded projects across the objectives A, B, C was recorded. Although, a majority of the projects focused on indicator 1, on tackling with the key categories of chemicals (i.e. 8 projects out of 15), comparable number of projects involved indicators 7 (i.e. vulnerable groups), 9 (i.e. websites), 10 (i.e. commitment) and 14 (i.e. capacity-building needs). Six projects focused on indicator 10 on commitment to SAICM (e.g. development of SAICM implementation plan) and 6 projects were involved with indicator 14 on identification of the capacity-building needs.
 181. The data on the eight indicators of IOMC were collected by the IOMC participating organizations on the sound management of chemicals and waste from global data-sets and other reporting schemes whereas the data on SAICM indicators of progress were submitted by the stakeholders on a self-assessment basis through an online questionnaire. The discussions on the interlinkages between several indicators of SAICM with IOMC indicators which was done for the first time in this progress report helped to complement the data collected through online questionnaire.
 182. Indicator D of IOMC on lead in decorative paint has ties with the indicator 12 on key international instruments which includes the implementation of ILO Convention on Use of White Lead in Painting (ILO, 1921). Indicator F on implementation status of core capacities for chemicals under the International Health Regulations (IHR 2005), and indicator G on number of parties to Minamata, Basel, Rotterdam and Stockholm Conventions are also linked with indicator 12 of SAICM.
 183. Indicator E of IOMC addresses the pesticide legislation based on the FAO/WHO International Code of Conduct. Pesticides were extensively covered by SAICM under multiple indicators in objective A on risk reduction and objective B on knowledge and information (Please see Appendix 3). Indicator 4 of SAICM on the chemical management tools not only directly covered the FAO/WHO International Code of Conduct, but also it enquired about the implementation of WHO classification of pesticides. Furthermore, indicator 4 of SAICM tracks the self-developed guidance material or tools by the Governments (or organizations) on management of pesticides risks and management of obsolete chemicals or pesticides. Indicator 3 of SAICM reports on stakeholders who have mechanisms to set priority for risk reduction associated with pesticides and indicator 1 on stakeholders who have developed mechanisms (i.e. programmes, legislations, policies, etc.) in regard to key categories of

chemicals including pesticides. Indicator 6 of SAICM is linked with indicator H of IOMC on the number of countries implementing the GHS. Indicator 14 of SAICM covers both IOMC indicator A on National Profiles, and IOMC indicator C on Poison Centres. Furthermore, indicator 5 of SAICM on monitoring activities for selected environmental and health priorities is linked with indicators B, C and D of IOMC. Indicator B on PRTR is also covered under indicator 4 of SAICM on tools.

184. The submissions by NGOs were limited to only 4 reports and one submission by Civil Society, yet it is of value to reflect on the specific progress reported by them under SAICM indicators of progress. NGO respondents demonstrated an overall below-average level of activity except for Central American Institute for Research on Toxic Substances with slightly above-average overall level of activity. The NGOs each had their specific priorities and strengths in regard to implementation of indicators. The Society for Ecological Restoration (SER) demonstrated the largest progress under indicators 19 and 20 on illegal international traffic of chemicals and hazardous waste, respectively. AWHHE reported a far above-average level of activity under indicators 9 (i.e. websites), 14 (i.e. capacity-building needs) and 18 (i.e. regional cooperation). Central American Institute for Research on Toxic Substances selected more than 95 per cent of the activities under indicators 2 (i.e. hazardous waste), 6 (i.e. standards) and 9 (i.e. websites). PAN also demonstrated a far above-average activity under indicators 7 (i.e. vulnerable groups) and 9 (i.e. websites), as well as a full conduct of all the activities under indicator 18 (i.e. regional cooperation). IPEN reported a great progress toward elimination of lead paint through several initiatives and projects in several countries. Moreover, IPEN reported progress in several projects including mercury enabling activities program, highly hazardous pesticides, endocrine-disrupting chemicals awareness initiative, IPEN-SAICM Emerging Policy Pilot Project and chemicals in products.
185. Two stakeholders from the private sector submitted their reports through SAICM online questionnaire. Both private sector respondents demonstrated largest level of activity under objective B followed by objective A. Both stakeholders reported full conduct of activities under indicator 9 on websites that provide information to stakeholders. ICCA also indicated full conduct of activities for indicators 19 and 20 on illegal international traffic of chemicals and waste. They also noted a significant progress under indicator 12 on significant changes to implementation of key international instruments, indicator 3 on priorities for risk reduction of chemicals. Indicators 2 (i.e. hazardous waste), 11 (i.e. multi-stakeholder coordinating mechanism) and 13 (i.e. resources) obtained a below-average level of activity by ICCA. American Petroleum Institute reported above-average level of activity under the indicator 1 (i.e. key categories of chemicals), 6 (i.e. standards) and 9 (i.e. websites), whereas, they showed below-average progress under indicators 3, 5 (i.e. monitoring), 7 (i.e. vulnerable groups) and 13. In addition, the two respondents selected majority of the activities under indicators 18 on chemical projects supported by other sources of funding even though this indicator was addressed only to the recipients of funding programmes whereas both respondents had identified as donor stakeholders; this could refer to a misunderstanding of the activity in the questionnaire.

4.3. Future Work toward the 2020 Goal

186. One of the functions of the International Conference is to evaluate the implementation of the SAICM with a view to measuring progress against the 2020 objective and taking strategic decisions, programming and prioritizing. By identifying achievements, understanding the gaps in implementation and prioritizing future actions, optimum progress may be achieved.
187. Stakeholders should consider lessons learned under the current SAICM in considering reporting needs and mechanisms in looking at SAICM and the sound management of chemicals and waste beyond 2020. As a result, in the following sections, the strengths, weaknesses and achievements of the SAICM progress reporting process over the reporting periods since 2009 are highlighted.

4.3.1. Strengths

188. The development of the progress reports over three periods using the data directly extracted from the stakeholders' responses to the questionnaire has helped to establish the strengths of the regions under certain indicators.
189. The number of parties to the Basel, Rotterdam and Stockholm Conventions has steadily grown since the baseline report. It has reached 183 parties for Basel, 160 for Rotterdam and 180 for Stockholm as of 2016 which indicative of the majority of the member States. The number of parties increased by 4, 5 and 10 per cent for the Stockholm, Basel, and Rotterdam, respectively since the baseline report.
190. Several indicators constantly obtained an above-average level of activity since the first progress report, including indicators 1, 2, 3 and 5:
- 190.1. The respondents completed more than 54 per cent of all the activities under indicator 1 on key categories of chemicals, indicator 2 on hazardous waste management in the first progress report which increased to more than 70 per cent in this progress report.
 - 190.2. Indicator 3 on setting priorities for risk reduction and indicator 5 on monitoring of environmental and human health priority substances had a nearly 50 per cent average score in the period 2009-2010 which augmented to more than 70 per cent in this reporting period. Thus, the SAICM stakeholders consistently reported an above-average level of activity under objective A on risk reduction.
191. Completion of more than 77 per cent of the activities under the indicators 9 on websites that provide information to stakeholders, 2 on hazardous waste management, 3 on setting priorities for risk reduction, 19 on illegal traffic in chemicals and 18 on regional cooperation on issues relating to the sound management of chemicals by the stakeholders was an indication that the full conduct of these indicators with a consistent effort is possible in run-up to 2020 goal.

4.3.2. Weaknesses

192. Limited reporting is the largest gap in the current report and needs to be addressed in future reporting, both for potential reports for 2017-2019 and for the beyond 2020 context. The conclusions on the progress are largely based on the responses provided by the stakeholders on their achievements toward the objectives. Without sufficient data, those conclusions are not fully reliable

- and not representative of the true status of global progress toward the sound management of chemicals.
193. The regions and the Governments have varying paces and priorities in implementing and achieving the SAICM objectives. Yet, by looking at the overall progress under all of the indicators over the years, it is clear that there is still a long run to achieve the 2020 goal. Thirty per cent of the indicators acquired a score of below 0.5, and 40 per cent of the indicators have a score above 0.7. These numbers could possibly diminish further if all the SAICM stakeholders submitted reports, on the assumption that those who do not report their progress also more likely have made fewer improvements to achieve the objectives.
194. Increasing the number of Governments submissions back to at least the rates in PR2 and PR1 may be achievable with some effort and encouragement. In particular, encouraging a larger participation by OL, LDC and LM countries can help to better understand the progress of developing countries toward sound management of chemicals and waste. One suggestion could be allocating some time with the stakeholders during relevant meetings emphasizing the significance of their contribution to the progress report. A better understanding of the questionnaire questions by the stakeholders is also needed in particular for those activities that were modified including indicator 11 on multi-stakeholder coordinating mechanism.
195. The majority of approved projects by QSP trust fund and GEF focused on the Strategic Approach objective A on risk reduction, B on knowledge and information and C on governance and fewer projects involved the objective E on illegal international traffic, even though objective E has acquired a high level of activity by the respondents to the questionnaire. In contrast, a considerable number of QSP trust fund and GEF projects involved objective D on capacity-building and institutional-strengthening yet very little progress was registered for this objective over the years. It might be of value to explore reasons for the slower than average progress of the objective D as compared to the rest of the objectives.
196. Objective D is the single objective that has shown very slow progress in particular under certain indicators including indicator 13 on resources (financial and in-kind) to assist capacity-building and technical cooperation, indicator 14 on identifying and prioritizing the capacity-building needs for the sound management of chemicals, indicator 15 on development assistance programmes that include the sound management of chemicals and indicator 16 on other sources of funding (not QSP trust fund) for sound management of chemicals project, all of which barely exceeded 30 per cent completion of the activities on average across all the respondents. Accordingly, indicator 16 on other sources of funding reported a decline over the years from an average score of 0.18 in 2009-2010 to 0.1 in 2014-2016.
197. The GHS is a key component of SAICM implementation, featuring in the basic elements of the Overall Orientation and Guidance. Nevertheless, as of 2016, 60 countries had fully or partially implemented GHS which stands for only 31 per cent of UN member States as compared to 41 countries in 2010 (i.e. the baseline data for IOMC indicators) with full or partial implementation of GHS in their national legislation.
198. The activity under indicator 13 on countries providing resources (financial and in-kind) targeted the donor Governments (organizations) exclusively. The recipient countries left this activity blank and did not acquire any score under this activity. As a result, the average score for the activity was

negatively biased due to the majority of the respondents who identified as 'recipients'. Thus, for the future progress report a better approach would be to calculate the overall average score of this indicator by aggregating the average score of each respondent across the 'donors' respondents instead of all the respondents. The same procedure could be applied to the rest of the indicators (14, 15, 16, and 18) under objective D to which only 'recipients' responded and 'donors' left them blank. The modified score could be more representative of the target audience to which the activity is addressed and could improve the overall score obtained under objective D.

199. The activities in the questionnaire under indicator 13 on countries (organizations) that provide resources (in-kind and financial) enquires solely the status of the contributions by the respective Governments and organizations. It could be of value in future progress reports to also ask for the quantitative data on the contributions and perhaps details on the type of projects that were financed; for example, whether they addressed any of SAICM Strategic Priorities during that certain reporting period. The total value of the contributions, the number of projects financed, and the issues addressed in these projects could better measure the progress under this indicator.
200. The data for indicator H of IOMC which is on the implementation of the Global Harmonized System of Classification and Labelling of Chemicals (GHS) was extracted from a research paper. Even though the paper is comprehensive, this information could be updated in a future progress report and in the longer-term, to support evaluations of SAICM and/or the sound management of chemicals and waste beyond 2020. It would be important for countries, and IOMC and other relevant agencies to be able to provide regularly updated statistics on the implementation of the GHS.

4.3.3. Achievements

201. The three SAICM progress reports, over three periods since 2009, accomplished to uncover and track the progress of the regions and highlight their strengths and weaknesses. These progress reports helped to stress the different pace of developing and developed countries in achieving the goals toward the sound management of chemicals, identify some specific needs of the regions in implementing the Strategic Objectives, and underline the positive impact of funding programmes in helping the countries reaching their goals; all of which would not have been possible without such a comprehensive analysis of the countries' data on progress over the years.
202. The present progress report has benefited from the inclusion of the IOMC indicators which have provided data on the sound management of chemicals from global data-sets and other reporting schemes.
203. Some specific examples of the stakeholders' achievements toward sound management of chemicals include, the significant number of countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct on pesticides management; 174 countries as of 2017. In addition, the increasing number of ratifications of Minamata Convention was notable; 34 in the period 2014-2016. As of 7 January 2019, there are 101 Parties (given that it did not enter into force until 16 August 2017).
204. In addition, indicator 7 on vulnerable groups has seen a noteworthy growth of 35 per cent since the first progress report. The number of SAICM focal points under the indicator 10 has reached 181 as of 2016 which has been an important achievement. Attendance at SAICM related meetings and

active engagement in SAICM activities both received substantial attention over the years so much that more than 80 per cent of the respondents reported their participation. More than 80 per cent of the activities under indicator 9 on websites were completed by the respondents; a development of more than 40 per cent since the first progress report. The respondents also reported a considerable boost in the level of activities for indicator 18 on regional cooperation on issues relating to the sound management of chemicals and indicator 19 on illegal traffic in chemicals by nearly 44 per cent on average as compared to first progress report.

205. The substantial number of projects funded by the funding programmes of QSP trust fund and GEF whose focus was SAICM Strategic objective A on risk reduction and objective B on knowledge and information has definitely had positive impacts on achieving the milestones under these two SAICM objectives.

4.4. Looking beyond 2020

206. The demonstration of credible, continuous progress to sound management of chemicals will help to secure political support and financing, and ultimately enhance impact over the long term.

207. In looking beyond 2020 for SAICM and the sound management of chemicals and waste:

- a) Developing objectively verifiable results-based indicators that reflect the progress (or lack thereof) toward minimizing the adverse health and environmental impacts of chemicals production, use and disposal, could prove to be a more effective and consistent approach.
- b) The experience of the Biodiversity Indicators Partnership in developing targets and indicators towards achieving the Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011-2020 suggests setting smart and ambitious targets as a firm ground for development of indicators, in an iterative process where indicators help to refine the measurability of targets. In particular, this experience could be considered helpful in developing targets and indicators which aim to measure the adverse impact of hazardous chemicals and waste on biodiversity as well as specific indicators on emerging policy issues, in setting targets for SAICM beyond 2020.
- c) A framework to track progress on multiple levels with multiple stakeholders could be considered. The use of different data sources and methods may help to ensure a more comprehensive review of global progress in the future.
- d) In respect of measuring the level of commitment to the sound management of chemicals and waste, the WHO core capacity monitoring framework on the status of implementation of the International Health Regulations is an example of an effective and comprehensive approach to evaluating the progress made by the States, including some data related to the sound management of chemicals and waste.
- e) The 2030 Agenda for Sustainable Development provides opportunities for Governments, industry and civil society to contribute concretely on a societal level and promote more responsible and sustainable production and consumption patterns globally. It provides a broad framework for everyone to contribute to the sound management of chemicals and prevention or reduction of waste production. Stakeholders should consider how the objectives developed in the beyond 2020 context for the sound management of chemicals

and waste collectively contribute to and support implementation of the 2030 Agenda for Sustainable Development.

5. ANNEXES

5.1. Annex 1- The Activity Map of the projects funded by QSP trust fund Rounds I-XIV⁴⁹

Indicator	1- CATS	2- HAZAWASTE	3- PRIORITY	4- TOOLS	5- MONITOR	6- STANDARDS	7- VULS	8- RESEARCH	9- WEB	10- COMMITMENT	11-MS COORD	12- INTL INSTR	14- NEEDS	15- NDP	18- REG COOP	Total Projects
AFR- complete	7	6	10	25	15	6	30	4	3	29	28	6	1	2	0	61
AFR-in progress	0	0	1	0	0	1	0	0	0	1	0	1	1	0	0	2
ASP- complete	8	2	0	12	9	5	5	1	3	25	29	3	0	0	1	42
ASP-in progress	2	0	0	0	0	1	1	0	1	1	1	1	1	0	0	3
CEE- complete	4	3	3	6	2	1	12	0	8	6	8	5	0	0	0	14
CEE-in progress	3	1	1	0	0	0	2	0	2	2	2	1	2	0	0	4
LAC- complete	9	2	4	18	6	8	15	6	11	14	16	11	0	0	0	43
LAC-in progress	2	0	0	1	1	0	0	0	0	0	0	1	1	0	0	2
Total	35	14	19	62	33	22	65	11	28	78	84	29	6	2	1	171

⁴⁹ From the rounds XIII and XIV, only the functional projects in the period 2014-2016 are shown in this activity map.

5.2. Annex 2- Indicators for reporting progress in implementation of the Strategic Approach

A. Risk reduction	1. Number of countries (and organizations) with mechanisms to address key categories of chemicals. (CATEGORIES)
	2. Number of countries (and organizations) with hazardous waste management arrangements. (HAZWASTE)
	3. Number of countries (and organizations) having mechanisms in place for setting priorities for risk reduction. (PRIORITIES)
	4. Number of countries (and organizations) implementing agreed chemicals management tools. (TOOLS)
	5. Number of countries (and organizations) engaged in activities that result in monitoring data on selected environmental and human health priority substances. (MONITORING)
B. Knowledge and information	6. Number of countries (and organizations) providing information according to internationally harmonized standards. (STANDARDS)
	7. Number of countries (and organizations) that have specific strategies in place for communicating information on the risks associated with chemicals to vulnerable groups. (VULNERABLE)
	8. Number of countries (and organizations) with research programmes. (RESEARCH)
	9. Number of countries (and organizations) with websites that provide information to stakeholders. (WEBSITES)
C. Governance	10. Number of countries (and organizations) that have committed themselves to implementation of the Strategic Approach. (COMMITMENT)
	11. Number of countries (and organizations) with multi-stakeholder coordinating mechanism. (STAKEHOLDER)
	12. Number of countries (and organizations) with significant changes to the implementation of key international chemicals priorities. (CONVENTIONS)
D. Capacity-building and technical cooperation	13. Number of countries (and organizations) providing resources (financial and in kind) to assist capacity-building and technical cooperation with other countries. (RESOURCES)
	14. Number of countries (and organizations) that have identified and prioritized their capacity-building needs for the sound management of chemicals. (NEEDS)
	15. Number of countries where development assistance programmes that include the sound management of chemicals. (NDP, National Development Plan)
	16. Number of countries (and organizations) with sound management of chemicals projects supported by other sources of funding (not Quick Start Programme funding). (OTHER FUNDS)
	17. Number of countries (and organizations) with projects supported by the Strategic Approach's Quick Start Programme Trust Fund. (QSP)
	18. Number of countries (and organizations) engaged in regional cooperation on issues relating to the sound management of chemicals. (REG COOP))
E. Illegal international traffic	19. Number of countries having mechanisms to prevent illegal traffic in toxic, hazardous and severely restricted chemicals individually. (ILL CHEMICAL)
	20. Number of countries having mechanisms to prevent illegal traffic in hazardous waste. (ILL WASTE)

5.3. Annex 3- SAICM online questionnaire for the period 2014-2016

Section B: OBJECTIVE A RISK REDUCTION
INDICATOR 1
B1: Mechanisms to address key categories of chemicals
B1.1: Does your government or organization have any of the following mechanisms in place to address chemicals or key categories of chemicals? [Legislation/ regulations]
Policies
[Programmes]
[Agreements]
[Standards]
[Other (please describe below)]
B1.1.1 Does your government or organization have programmes in place to encourage compliance with the mechanisms identified above?
[Programme to encourage compliance (e.g. education and training)]
[Enforcement programme (e.g. inspections, sampling/testing)]
[Other (please describe below)]
Please briefly provide additional information, including which stages of the lifecycle your mechanism(s) address (e.g. primary or secondary manufacturing, product use, recycling, end of life, etc.)? Please note that hazardous waste management is covered in the next section.
B1.2 Which of the following categories or groups of chemicals does your country or organization prioritize for risk management?
[Persistent organic pollutants (as listed under the Stockholm Convention)]
[Other Persistent, bioaccumulative and toxic substances]
[Carcinogenic, mutagenic or reproductive toxic substances]
[Endocrine disruptors]
[Immunotoxins]
[Neurotoxins]
[Mercury or mercury-containing sources]
[Other metals or their compounds]
[Chemicals produced in high volume]
[Chemicals subject to wide dispersive uses]
[Pesticides]
[Chemical contaminants in consumer products]

[Others (please describe below)]
[Not known]
[Not applicable (please explain below)]
B1.2.1 Please briefly provide additional information (e.g. other priority chemicals or categories, or reasons why this is not relevant for your country or organization).
INDICATOR 2
B2: Hazardous waste management arrangements
B2.1 Please identify which part of the waste management cycle your government or organization addresses and the mechanism used:
[Prevention/reduction in generation of hazardous waste]
[Collection and interim storage of hazardous waste]
[Disposal of hazardous waste]
[Recovery and recycling of hazardous waste]
[Other (please describe below)]
Please briefly provide any additional information you would like to share:
B2.2 Please indicate below whether your government or organization introduced, revised or was developing mechanisms to address parts of the waste management cycle over the 2014 to 2016 period?
[Prevention/reduction in generation of hazardous waste]
[Collection and interim storage of hazardous waste]
[Disposal of hazardous waste]
[Recovery and recycling of hazardous waste]
[Other (please describe below)]
Please briefly provide any additional information you would like to share:
B2.3 Please indicate whether your country or organization addresses any of the following specific waste streams?
[Plastics]
[Lead-acid batteries]
[Biomedical & healthcare wastes]
[Mobile phones]
[Other electrical & electronic equipment]
[Persistent organic pollutants contaminated waste]
[Dioxin-related substances]

[Pesticide contaminated wastes]
[Other (please describe below)]
Please briefly provide additional information, including the type of tool or mechanism used to address each waste stream (legislation, permit, stewardship program, education etc.).
INDICATOR 3
B3: Mechanisms for setting priorities for risk reduction.
B.3.1 Does your country or organization use science-based risk assessment to set priorities for risk reduction for any of the following types of chemicals?
[Industrial chemicals]
[Pesticides]
[Biocides]
[Food additives]
[Other (please describe below)]
B3.1A Please specify whether the above is pre-market or post-market assessment? Â
same options
B3.1B Which of the following risks are considered as part of your government's or organization's prioritization process? Â
[Occupational health and safety risks]
[Environmental risks]
[Consumer or public health risks]
[Other (please describe below)]
[Not known]
[Not applicable (please explain below)]
Please briefly provide any additional details you wish to share on your answers to question B3.1.
B3.2 Does your government or organization have programmesÂ for the management of priority risks associated with exposures to any of the following?
[Industrial chemicals]
[Pesticides]
[Biocides]
[Chemical contaminants in food]
[Chemical contaminants in consumer products]
[Chemical contaminants in drinking water]
[Chemical contaminants in recreational water]
[Chemical contaminants in groundwater]

Air pollutants]
[Other (please describe below)]
Please briefly provide any additional information you wish to share.
B3.3 Is there a multi-disciplinary scientific committee, body or institute engaged in your government's or organization's scientific risk assessment, prioritization, or risk reduction activities?
Please briefly describe your committee(s), including the name and the specific topics dealt with:
INDICATOR 4
B4: Use of chemicals management tools
B4.1 Which of the following tools or guidance materials for risk reduction published by the Participating Organizations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) are used by your government or organization?
[FAO/WHO International Code of Conduct for the Distribution and Use of Pesticides]
[IOMC Toolbox]
[IPCS International Chemical Control Toolkit (Control Banding)]
[OECD eChem Portal]
[OECD Guidelines for the Testing of Chemicals]
[OECD Environmental Risk Assessment Toolkit]
[OECD Substitution and Alternatives Assessment Toolbox]
[UNITAR Guidance on Developing a Risk Management Plan for Priority Chemicals]
[WHO Air Quality Guidelines]
[WHO Drinking Water Quality Guidelines]
[WHO Human Health Risk Assessment Toolkit]
[WHO International Chemical Safety Cards]
[WHO Recommended Classification of Pesticides by Hazard]
[Others (please describe below)]
[Not known]
[Not applicable (please explain below)]
If desired, please briefly provide additional details about your response to this question.
B4.2 Please provide the name(s) of any other (i.e. non-IOMC) tools or guidance documents your government or organization has found helpful for risk reduction activities:
B4.3 Has your government or organization published any tools or guidance materials in the following areas:

[Identification of chemicals in use]
[Hazard identification]
[Exposure assessment]
[Risk characterization]
[Management of pesticide risks]
[Management of obsolete chemicals or pesticides]
[Prevention and control of chemical pollution and waste]
[Pollutant Release and Transfer Registers (PRTs)]
[Management of media-specific risks (e.g., water quality, air quality)]
[Identification and use of less hazardous alternative substances]
Major industrial accidents]
[Others (please describe below)]
If desired, please briefly provide any additional information.
B4.4 Please describe any additional tools or guidance materials that your government or organization would find helpful for developing or implementing risk reduction activities:
INDICATOR 5
B5: Monitoring activities for selected environmental and health priorities
B5.1 Please identify whether your government or organization is engaged in any of the following kinds of monitoring or surveillance activities with respect to chemicals:
[Environmental monitoring e.g., air, water, environmental species]
[Human biomonitoring, e.g., blood, serum, urine]
[Cases of human poisoning]
[Cases of occupationally-related disease]
[Chemical incidents]
[Food and/or drinking water]
[Other types of monitoring carried out (please describe below)]
B5.2A Please identify the sectors that are involved in the monitoring or surveillance activities you identified in question B5.1.
[Agriculture]
Environment]
[Health]
[Industry]

[Labour]
[Natural Resources]
[Transportation]
[Other]
[Not known]
[Not applicable]
Please specify the sector:
B5.2B Please describe the engagement of the health sector in any of the monitoring or surveillance activities you identified in question B5.1.
B5.3Â Please indicate whether any significant changes or new developments have occurred in your country's or organization's monitoring or surveillance programmes over the period 2014-2016.
[Environmental monitoring e.g., air, water, environmental species]
[Human biomonitoring, e.g., blood, serum, urine]
[Cases of human poisoning with chemicals]
[Cases of occupationally-related disease linked to chemical exposure]
[Chemical incidents involving chemicals]
[Other (please describe below)]
Please briefly provide any additional details you wish to share about your monitoring or surveillance programmes.
B5.4 Is your government or organization involved in any cooperative work to compare the results of monitoring or surveillance programmes?
If possible, please briefly provide more details:
Risk Reduction - General
Please provide any additional information you would like to share on your government's or organization's activities relevant to the risk reduction indicators.Â
Section C: OBJECTIVE B KNOWLEDGE & INFORMATION
INDICATOR 6
C1: Provision of information in accordance with internationally harmonized standards Â
C1.1 Do you have standards or requirements in your country or organization for labelling the hazards and/or risks posed by all chemicals at the following stages in a chemical's life-cycle?
[Production]
[Occupational use]
[Consumer or public use]
[Transport]
[Disposal]

[Other (please describe below)]
Please briefly provide any additional information you wish to share.Â
C1.2. Do the labeling requirements of your government or organization conform with those of theÂ Globally Harmonized System for the Classification and Labelling of Chemicals (the "GHS") for the following categories?Â
[Dangerous Goods]
[Pesticides]
[Consumer products]
[Occupational health and safety/Workplace use]
[Industrial chemicals]
[Other (please describe below)]
Please briefly provide any additional information you wish to share.
C1.3.Â Over the 2014 to 2016 period, were there any major changes in yourÂ standards or requirements for labelling the hazards and/or risks posed by chemicals with respect to conformity with the GHS?Â
Please briefly provide any additional information you wish to share on the changes:
INDICATOR 7
C2: Communication of risks to vulnerable groups
C2.1 Does your government or organization undertake activities or publish guidance, training or awareness materials designed to communicate chemical safety issues to any of the following?
[Women]
[Children]
[The elderly]
[Workers]
[Workers in the informal sector]
[Indigenous peoples]
[Highly exposed groups]
[Consumers (e.g. of a specific product type)]
[The general public]
[Other (please describe below)]
C2.2A Please identify the sectors involved in communicating aboutÂ chemical safety issuesÂ with the groups identified in question C2.1.
[Agriculture]

[Environment]
[Health]
[Industry]
[Labour]
[Natural Resources]
[Transportation]
[Other (please describe below)]
[Not known]
Not applicable]
Please specify the sector involved.
C2.2B Please describe the nature of involvement by the health sector in communicating with the groups you identified in question C2.1.
Please briefly provide any additional information you wish to share about your communications with vulnerable groups.
INDICATOR 8
C3: Research
C3.1Â Has your country or organization commissioned or funded research in any of the following areas of chemical safety?Â
[Human health effects or exposure]
[Environmental effects, releases, or exposure]
[Safer alternatives]
[Cleaner production technologies]
[Other (please describe below)]
[Not known]
[Not applicable (please explain below)]
Please briefly provide any additional information you wish to share.
C3.2A Please indicate the sectors involved in any research identified in question C3.1?Â
[Agriculture]
[Environment]
[Health]
[Industry]
[Labour]
[Natural Resources]

[Transportation]
[Other]
[Not known]
[Not applicable]
Please specify the sector involved.
C3.2B Please briefly describe the nature of involvement by any health sector institutions or professional bodies in the research you identified in question C3.1.
INDICATOR 9
C4: Websites providing information to stakeholders
C4.1Â Does your government or organization maintain any websites that provide publicly available information on any of the following topics. [
Chemicals in use]
[Chemicals safety laws that apply in the country]
[Hazards and risks associated with specific chemicals]
[Exposure scenarios or risks associated with specific uses]
[Guidance on how to prevent exposure]
[First aid and medical information for selected chemical risks]
[Pollution release information]
[Chemical safety information in local languages]
[Chemical alternatives/substitutes]
[Other (please describe below)]
C4.1.1 If any of the websites identified in question C4.1 are hosted by a health sector organisation, please briefly describe below and provide web links.
C4.2 Please indicateÂ whether the overall amount of chemical safety information you make publicly available through websites has increased, decreased or remained the sameÂ over the 2014 to 2016 period:
Please briefly provide any additional information you wish to share on the provision of information to stakeholders through websitesÂ (including web links).
C4.3 Have you used other channels of public information (e.g., social media (Twitter, Facebook etc.), printed media, television, radio, or community workers) between 2014 and 2016 to communicate on chemicals safety related topics?Â
Please briefly provide any additional information you wish to share.
Knowledge and Information - General
Please provide any additional information you would like to share on your government's or organization's activities relevant to the Knowledge and Information indicators.Â
Section D: OBJECTIVE C GOVERNANCE

INDICATOR 10
D1: Commitments to implementation of the Strategic Approach
D1.1 Please identify how your government or organization has demonstrated its commitment to SAICM implementation over the 2014 to 2016 period:Â
[Ministerial or other official public statements expressing support for SAICM]
[Resolutions of governing bodies that refer to SAICM (e.g., by an Executive or management board)]
[Nomination of a new national or organizational focal SAICM focal point (where none existed)]
[Focal point role formalized in organizational plans or duty statements]
[Publication of a SAICM implementation plan or equivalent]
Â [Inclusion of information on progress in SAICM implementation in annual reports]
[Establishment of a committee to coordinate on chemical safety, including SAICM matters]
[Introduction or renewal of a chemical safety programme that supports or contributes to SAICM implementation]
[Implementation of an ongoing chemical safety programme that supports or contributes to SAICM implementation]
[Attendance at SAICM related meetings]
[Active engagement in ongoing SAICM activities (e.g. emerging policy and other issues)]
[Organizational policies that include and/or support SAICM implementation (e.g. Corporate Social Responsibility Policy)]
[Other (please describe below)]
[Not known]
[Not applicable (please explain below)]
Please briefly provide any additional information you wish to share.
INDICATOR 11
D2: Multi-stakeholder coordinationÂ
D2.1 Please indicate if your government has aÂ national multi-stakeholder or multi-sectoral committee designed to broadly address (make decisions or provide advice on) chemical safety issues, including SAICM:
[Government (only) committee]
[Multi-stakeholder committee]
[Other (please describe below)]
D2.1.1A Please identify which ministries are represented on your government only committee.
[Agriculture]
[Customs authorities]
[Education]
[Environment]

[Finance/Economy]
. [Foreign Affairs]
[Health]
[Industry]
[Internal Affairs/Planning]
[Labour]
[Prime Minister]
[Science]
[Trade]
[Transport]
[Other levels of government]
[Other]
D2.1 Please indicate whether your organisation coordinates or is engaged in any multi-stakeholder or multi-sectoral committees (not including ICCM) designed to broadly address (make decisions or provide advice on) chemical safety issues, including SAICM:
[Non-government (only) committee]
[Multi-stakeholder committee]
[Other (please describe below)]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee.
Academia]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Civil Society - health]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Civil Society - environment]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Civil Society - human rights/justice]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Civil Society - labour]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Civil Society - other]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Industry - chemical manufacturer]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Industry - product manufacturer]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Industry - importer/distributor]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Industry - retailer]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Industry - recycling/waste management]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Industry - other]

D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Other (please describe below)]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Not applicable (please explain below)]
D2.1.1 Please identify the types of stakeholders on your non-governmental committee. [Uncertain]
D2.1.2 (a) Please identify the types of stakeholders included on your multi-stakeholder committee. [Academia]
D2.1.2 (a) Please identify the types of stakeholders included on your multi-stakeholder committee. [Civil Society]
D2.1.2 (a) Please identify the types of stakeholders included on your multi-stakeholder committee. [Government]
D2.1.2 (a) Please identify the types of stakeholders included on your multi-stakeholder committee. [Industry]
D2.1.2 (a) Please identify the types of stakeholders included on your multi-stakeholder committee. [Intergovernmental organization]
D2.1.2 (a) Please identify the types of stakeholders included on your multi-stakeholder committee. [Other]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Agriculture]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Cultural group]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Environment]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Health]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Industry]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Labour]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Human rights/justice]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Other (please describe below)]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Not applicable (please explain below)]
D2.1.2 (b) Please identify the interests represented on your multi-stakeholder committee. [Not known]
Please briefly indicate which "Others" are represented on your committee.
D2.1.3 Please briefly describe your "Other" committee.
Please briefly provide any additional information you wish to share.
D2.2 In 2012, the International Conference on Chemicals Management adopted a strategy for strengthening the engagement of the health sector in chemicals management. Â Please briefly describe in the space that follows any activities undertaken by your government or organizationÂ over the 2014-2016 period toÂ support implementation of this strategy.Â
INDICATOR 12
D3: Implementation of key international chemicals agreements
D3.1Â Were any significant changes made to your country's or organization's status and/or implementation with regard to the following international or regional chemicals instruments over the 2014 to 2016 period Â (e.g. through the enacting of legislation, programme implementation, or through relevant policies)? Â Acronyms FAO - Food and Agriculture Organization ILO - International Labour Organization Â IMO - International Maritime OrganizationÂ OECD - Organisation

for Economic Co-operation and Development OPCW - Organisation for the Prohibition of Chemical Weapons UNECE - United Nations Economic Commission for EuropeÂ UNEP - United Nations Environment programme
[Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (UNECE, 1998)]
[Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (UNEP, 1989)]
[Convention on the prohibition of the development, production, stockpiling and use of chemical weapons and their destruction (OPCW, 1992)]
[Geneva Convention on Long-range Transboundary Air Pollution (UNECE, 1979)]
[Minamata Convention on Mercury (UNEP, not yet in force)]
[Montreal Protocol on Substances that Deplete the Ozone Layer (1987) under the Vienna Convention on the Protection of the Ozone Layer (UNEP, 1985)]
[ILO Convention 13: Use of White Lead in Painting (ILO, 1921)]
[ILO Convention 136: Protection Against Hazards of Poisoning Arising from Benzene (ILO, 1971)]
[ILO Convention 139: Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents (ILO, 1974)]
[ILO Convention 148: Protection of Workers against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration (ILO, 1977)]
[ILO Convention 162: Safety in the Use of Asbestos (ILO, 1986)]
[ILO Convention 170: Safety in the Use of Chemicals at Work (ILO, 1990)]
[ILO Convention 174: Prevention of Major Industrial Accidents (ILO, 1993)]
[IMO Convention for the Prevention of Pollution from Ships (IMO, 1973,1978)]
[IMO Convention on Oil Pollution Preparedness, Response and Cooperation (IMO, 1990)]
[IMO Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances (IMO, 2000)]
[IMO Convention on the Control of Harmful Anti-fouling Systems on Ships (IMO, 2001)]
[OECD legal instruments pertaining to chemicals safety]
[Protocol on Pollutant Release and Transfer Registers (2003) under the Aarhus Convention]
[Rotterdam Convention on the Prior informed consent procedure for certain hazardous chemicals and pesticides in international trade (UNEP and FAO, 1998)]
[Stockholm Convention on Persistent Organic Pollutants (UNEP, 2001)]
[Other (please describe below)]
[Not known]
[Not applicable]
D3.1.1 Please brieflyÂ describe any changes identified in question D3.1 and briefly describe the outcome with regards to implementation of the instrument(s).Â
D3.2 Please briefly provide any additional information on how your government or organization is engaged in implementing or supporting key international agreements relevant for chemicals and waste.Â
Governance - General
4.4.1 Please briefly provide any additional information you would like to share on your government's or organization's activities relevant to the Governance indicators.Â

Section E: OBJECTIVE D CAPACITY BUILDING AND TECHNICAL COOPERATION

Self-identification The relevance of many of the indicators for this objective depends on whether a country or organization is primarily a donor or a recipient of capacity building assistance. Therefore, the questions that will be asked in this part are based on your self-identification as either a donor or recipient. If you prefer to have the opportunity to answer all the questions, simply select "both".

INDICATOR 13

E1: Financial and in-kind resources to assist capacity-building and technical cooperation (Donors only)

E1.1D Please indicate whether your government or organization provided financial or in-kind assistance over the 2014 to 2016 period to improve capacity for the sound management of chemicals in developing countries or countries in transition? If applicable and possible, please also indicate how this compares to assistance provided in the last reporting period (2011 to 2013).

[Financial]

[In-kind]

[Other]

[None]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1.

[Agriculture]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1.

[Environment]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Foreign Affairs]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Health]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Industry]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Labour]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Natural Resources]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1.

[Transportation]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Other]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Not known]

E1.1.1D If possible and applicable, please indicate which government department(s) provided the financial or in-kind assistance identified in question E1.1. [Not applicable]

Please briefly provide any additional information you wish to share about assistance provided by your country or organization.

INDICATOR 14
E2: Identification and prioritization of capacity-building needs (Recipients only)
E2.1R Which of the following types of plans, relevant for identifying capacity building needs for chemicals management, has your government or organization completed?
[National Chemicals Profile]
[National SAICM Implementation Plan]
[National Implementation Plan for Stockholm Convention]
[National Environmental Health Action Plan]
[Other (please specify)]
E2.2R If possible, please select the priority needs you have identified from the list below (based on the 11 basic elements from the Orientation and Guidance Document):
[Legal frameworks that address the life cycle of chemicals and waste]
[Relevant enforcement and compliance mechanisms]
[Implementation of chemicals and waste-related multilateral environmental agreements, as well as health, labour and other relevant conventions and voluntary mechanisms]
[Strong institutional frameworks and coordination mechanisms among relevant stakeholders]
[Collection and systems for the transparent sharing of relevant data and information among all relevant stakeholders using a life cycle approach, such as the implementation of the Globally Harmonized System of Classification and Labelling of Chemicals]
[Industry participation and defined responsibility across the life cycle, including cost recovery policies and systems as well as the incorporation of sound chemicals management into corporate policies and practices]
[Inclusion of the sound management of chemicals and waste in national health, labour, social, environment and economic budgeting processes and development plans]
[Chemicals risk assessment and risk reduction through the use of best practices]
[Strengthened capacity to deal with chemicals accidents, including institutional-strengthening for poison centres]
[Monitoring and assessing the impacts of chemicals on health and the environment]
[Development and promotion of environmentally sound and safer alternatives]
): [Other (please describe below)]
[Not applicable (please explain below)]
Please briefly provide any additional information or comments you wish to share on the identification and prioritization of capacity-building needs.
INDICATOR 15
E3: Development assistance programmes that include sound chemicals management

E3.1DÂ Did your country include chemicals management as a priority in national development assistance funding programmes over the 2014 to 2016 period?Â
If possible, please provide the name of the programme and a web link for more information.Â
E3.1RÂ Did your country have a national development plan covering the years between 2014 and 2016 and addressing priority needs for the sound management of chemicals? *Â
Please provide the name(s) of the relevant development plan(s) in the space below and provide a web link if possible.
Please briefly provide any additional information or comments you wish to share relevant to the inclusion of chemicals management in development assistance programmes.Â
INDICATOR 16
E4: Other sources of funding for capacity-building (Recipients only)
E4.1Â Have any of the following sources provided financial support for capacity-building activities for the sound management of chemicals in your country or organization between 2014 and 2016? Note: The secretariat will use its own records to provide comparative data on funding under the SAICM Quick Start Programme (QSP) so there is no need to identify this source ofÂ funding.Â
[Global Environment Facility (GEF)]
[Multilateral Fund for the Montreal Protocol]
[United Nations or United Nations Agency (e.g., ILO, FAO, UNDP, UNEP, UNIDO, UNITAR, WHO)]
[Regional Cooperation Organization]
[Regional Development Bank]
[The World Bank]
[Multi-lateral Environment Convention Trust Fund]
[Bilateral funding agreement with another country]
[Foundation or charitable body]
[Private sector or company]
[Other type of funding source not listed above (please specify)]
[Not known]
[None]
[Not applicable]
Please briefly provide any additional details below, including the name of the organization or agency that provided the funding.
INDICATOR 18
E5: Regional cooperation on sound chemicals managementÂ
E5.1 Please indicate whether your government or organization has been engaged in regionalÂ cooperative work in any of the following subject areas over the 2014 to 2016 period? Â [
Risk reduction]

[Knowledge and information]
[Governance]
[Capacity-building and technical cooperation]
[Illegal international traffic]
[Other (please specify below)]
Please briefly provide any additional information or comments you wish to share on regional cooperation on sound chemicals management.
Capacity-building and technical cooperation - General
Please briefly provide any additional information or comments you would like to share on your government's or organization's activities relevant to the capacity-building and technical cooperation indicators.
F: OBJECTIVE E ILLEGAL INTERNATIONAL TRAFFIC
INDICATOR 19
F1: Illegal traffic in toxic, hazardous and severely restricted chemicals
F1.1. Which of the following activities in support of preventing illegal international traffic of hazardous chemicals are in place in your country or organization?
[Implementation of national legislation preventing illegal traffic of hazardous chemicals]
[Communication of information on movements of hazardous chemicals out of the country to neighbouring countries]
[Public information and awareness on levels and cases of illegal trade and remedial actions undertaken]
[Specific training of border control agents]
[Cooperation and/legal agreements with neighbouring countries]
[Monitoring of international traffic in hazardous chemicals]
[Other measures not stated above (please specify)]
Please briefly provide any additional information you wish to share.
INDICATOR 20
F2: Illegal international traffic of hazardous waste
F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization?
[Implementation of national legislation preventing illegal traffic of hazardous waste]
[Communication of information on movements of hazardous waste out of the country to neighbouring countries]
F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization? [Public information and awareness on levels and cases of illegal trade remedial actions undertaken]
F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization? [Specific training of border control agents]
F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization? [Cooperation and/legal agreements with neighbouring countries]

F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization? [Monitoring of international traffic in hazardous waste]
F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization? [National legislation implementing Article 9 of the Basel Convention concerning illegal traffic]
F2.1 Which of the following activities in support of preventing illegal international trade in hazardous waste are in place in your country or organization? [Other measures not stated above]
Please briefly provide any additional information you wish to share.
Illegal international traffic - General
Please briefly provide any additional information or comments you would like to share on your government's or organization's activities relevant to the indicators for illegal international traffic.
End of Questionnaire You have reached the end of this questionnaire. Your participation will help to ensure that the third SAICM report on progress is accurate and complete so it can be used to measure progress in SAICM over the 2014 to 2016 period. It will also contribute useful information to assist in setting future priorities for the global sound management of chemicals and waste. As a reminder: Your link to this questionnaire is unique and can only be used to submit one questionnaire response. You are requested to consult as necessary and appropriate, and provide a single consolidated response for your country or organization. You can save the questionnaire at different points and resume completion at any time before the deadline. Once you click submit, you will be given the opportunity to print your questionnaire response but you will not be able to access the questionnaire again. Thank you for participating.
Do you consent to your government or organization's response being made publicly available on the SAICM website?



Strategic Approach
to International
Chemicals Management

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**Open-ended Working Group of the International Conference
on Chemicals Management
Third meeting**

Montevideo, 2–4 April 2019

Item 4 (b) of the provisional agenda*

**Progress towards the achievement of the 2020 overall
objective of the sound management of chemicals: overall
orientation and guidance towards the 2020 goal**

**Interim report on progress in the implementation of the overall
orientation and guidance for achieving the 2020 goal of sound
management of chemicals**

Note by the secretariat

1. The secretariat has the honour to present an interim report on progress in the implementation of the Overall Orientation and Guidance for achieving the 2020 goal of the Sound Management of Chemicals, as requested in the International Conference on Chemicals Management (ICCM) Resolution IV/1. The report is presented in the annex and has not been formally edited.
2. This interim report provides a general reflection on progress, based on reports submitted by stakeholders, and analysis of relevant data sets and other available information. It is not a comprehensive assessment.
3. The Working Group may wish to take note of the interim report on progress towards implementing the Overall Orientation and Guidance and to give guidance to the secretariat in preparing the report to be presented to the fifth session of the Conference in 2020.
4. Furthermore, stakeholders are invited to comment on this interim report, both in the context of celebrating the achievements of the Strategic Approach in 2020 and in setting out baseline information on chemicals and waste in the beyond 2020 context. Comments should be submitted to the secretariat by 31 May 2019.

* SAICM/OEWG.3/1.

Annex

Interim report on progress in the implementation of the overall orientation and guidance for achieving the 2020 goal of sound management of chemicals

I. Introduction

1. At its fourth session, the International Conference on Chemicals Management (ICCM), adopted resolution IV/1, in which the Overall Orientation and Guidance for achieving the 2020 goal of sound management of chemicals was endorsed as a voluntary tool that will assist in the prioritization of efforts for the sound management of chemicals and waste as a contribution to the overall implementation of the Strategic Approach to International Chemicals Management (SAICM).
2. The aim of the Overall Orientation and Guidance is to provide direction and identify approaches for all Strategic Approach stakeholders towards facilitating the achievement of the 2020 goal of sound chemicals management, including some concrete elements required at the national level to achieve sound chemicals management to support the implementation of the Overarching Policy Strategy.
3. A set of basic elements were recognized as critical at the national and regional levels to the attainment of sound chemicals and waste management in the overall orientation and guidance. Upon the request of the first meeting of the intersessional process, the secretariat undertook a further review of the basic elements for the second meeting of the intersessional process (SAICM/IP.2/8) in March 2018, via a stakeholder consultation process. Within that review, the basic elements were categorized as follows:

Key Area I: Legal and institutional frameworks, implementation and enforcement

- 1: Legal frameworks that address the life-cycle of chemicals and waste
- 2: Strong institutional frameworks and coordination mechanisms among relevant stakeholders
- 3: Implementation of chemicals and waste-related multilateral environmental agreements, as well as health, labour and other relevant conventions and voluntary mechanisms

Key Area 2: Stakeholder participation and sectoral engagement

- 4: Industry participation and defined responsibility across the life cycle
- 5: Strengthened capacity to prevent, prepare for and respond to chemicals accidents, including institutional-strengthening for poison centres

Key Area 3: Knowledge and information, risk assessment/reduction and monitoring

- 6: Collection and systems for the transparent sharing of relevant data and information among all relevant stakeholders using a life cycle approach
- 7: Chemicals risk assessment and risk reduction through the use of best practices
- 8: Monitoring and assessing the impacts of chemicals on health and the environment
- 9: Development and promotion of environmentally sound and safer alternatives

Key Area 4: Political leadership, outreach, education and promotion

- 10: Inclusion of the sound management of chemicals and waste in national health, labour, social, environment, agriculture, fisheries, forestry, research, education and economic budgeting processes and development plans.

5. Furthermore, the six core activity areas identified in the Overall Orientation and Guidance to implement the Strategic Approach objectives include:

- (a) Enhance the responsibility of stakeholders: promoting and reinforcing commitment and multisectoral engagement;
- (b) Establish and strengthen national legislative and regulatory frameworks for chemicals and waste: improving capacity to address the basic elements of the sound management of chemicals and waste and encouraging regional cooperation;
- (c) Mainstream the sound management of chemicals and waste in the sustainable development agenda: advancing risk reduction and enhancing the link between the sound management of chemicals and waste and health, labour, and social and economic development planning, processes and budgets;
- (d) Increase risk reduction and information sharing efforts on emerging policy issues: continuing to promote actions on issues not currently addressed in existing agreements, complementing initiatives taken by other bodies;
- (e) Promote information access: increasing the accessibility of relevant information and making it understandable for all levels of society;
- (f) Assess progress towards the 2020 goal of minimizing the adverse effects of chemicals on human health and the environment: identifying achievements, understanding the gaps in implementation and prioritizing actions for achievement by 2020.

6. The present report provides a review of the progress made towards each of the six core activity areas identified in the Overall Orientation and Guidance, including review of the basic elements to achieve the sound management of chemicals.

7. In 2016 the ICCM5 Bureau invited the regions and SAICM stakeholder groups to compile information from within their respective regions and sectors on initiatives related to the implementation of the SAICM Overall Orientation and Guidance. The secretariat developed a reporting template to support stakeholders to gather necessary information on implementation of the action points set out in the Overall Orientation and Guidance. The template^a was set up in three separate tables: Table I Implementation of actions identified in the Overall Orientation and Guidance; Table II Support to implementation of the 11 basic elements identified in the Overall Orientation and Guidance; and Table III Implementation of the SAICM emerging policy issues and other issues of concern.

8. Information was received from the Africa Region, Barbados, Brazil, Canada, Colombia, Costa Rica, the European Union (EU), Iran (Islamic Republic of), Mexico, Monaco, Panama, Industry, International POPs Elimination Network (IPEN) and the Pesticides Action Network (PAN). The SAICM Secretariat reviewed the information received from stakeholders, drawing out relevant cross cutting information within this interim report. Given the limited reporting from stakeholders, the SAICM Secretariat also supplemented this interim report with additional available information and data sets. This report is not a comprehensive assessment of progress.

II. Progress in implementing the overall orientation and guidance

9. As noted above, this report reviews the progress in each of the six core activity areas identified in the overall orientation and guidance together with the basic elements. It reviews the overall guidance, provides reflections on progress and offers some considerations in looking ahead to 2020 and beyond per core activity area.

^a The tracking table template is available on the SAICM web-site at the following link:
<http://www.saicm.org/Implementation/Towards2020/tabid/5499/language/en-US/Default.aspx>

A. Enhance the responsibility of stakeholders: promoting and reinforcing commitment and multisectoral engagement

1. Overall guidance^b

10. The involvement of all relevant stakeholders and sectors, at all levels, is key to achieving the objectives of the Strategic Approach and the basic elements, as are transparent, inclusive and open implementation processes as well as public participation in regulatory and other decision-making processes that relate to chemical safety.

11. Greater awareness and the involvement of various sectors – in particular health, agriculture, labour and industry – as well as public interest groups, in policy deliberation, development and implementation are critical in providing an informed basis for the sound management of chemicals at the national, regional and global levels.

12. There is a need for stronger engagement and an increased assumption of responsibility by downstream entities, in particular industries, to address the distribution and use of chemicals in the manufacture of products and throughout their life cycle, as well as for a more extensive approach to stewardship.

2. Reflections on progress^c

13. Since the fourth session of the Conference, 19 new stakeholder groups nominated official SAICM focal points, demonstrating on-going and increasing interest in the Strategic Approach. Three of the newly identified focal points were from international organizations and bodies / inter-governmental organizations, specifically: The Ozone Secretariat; Secretariat of the Basel, Rotterdam and Stockholm Conventions; and the World Bank. The remaining 16 new stakeholders were from non-governmental organizations, including: Academie de l'eau, Action Jeunesse pour le Developpement, Aerospace Industries Association, Association des Constructeurs Européens d'Automobiles, Basel Convention Coordinating Centre for Africa, European Chemicals Agency (ECHA), Forum CC, Health and Environment Alliance, International Chemical Trade Association AISBL, International Federation of Pharmaceutical Manufacturers & Associations, International Generic and Biosimilar Medicines Association, International Panel on Chemical Pollution, International Sustainable Chemistry Collaborative Centre, Outreach Social Care Project, Swedish Society for Nature Conservation and Unissons-nous pour la Promotion des Batwa.

14. ICCM Resolution II/2 underlined the important role of regional meetings and coordination mechanisms in enabling stakeholders in each region to exchange experience and identify priority needs in relation to the implementation of SAICM and to develop regional positions on key issues. Five SAICM regional meetings took place in early 2018: Asia-Pacific from 23 to 25 January 2018 in Bangkok, Thailand; Latin American and the Caribbean from 29 to 31 January 2018 in Panama City, Panama; Africa from 6 to 8 February 2018 in Abidjan, Côte d'Ivoire; EU-JUSCANZ on 9 February 2018 in Paris, France; and Central and Eastern Europe from 19 to 21 February 2018 in Lodz, Poland. A number of informal regional meetings were also held back-to-back with the preparatory meetings for the Conference of the Parties for the Minamata Convention on Mercury and the Basel, Rotterdam and Stockholm Conventions.

15. With respect to health sector engagement, the Seventieth World Health Assembly approved The Roadmap to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond in May 2017. The Roadmap was requested by the World Health Assembly in its Resolution WHA69.4 (2016) and builds on the World Health Organization's (WHO) existing relevant work as well as the strategy for strengthening the engagement of the health sector in the implementation of the Strategic Approach adopted by the third session of the International Conference in September 2012. The WHO submitted a report to the Working Group on the WHO Chemicals Road Map and Global Chemicals and Health Network as outlined in document SAICM/OEWG.3/INF/10. One of the actions in The Roadmap mandates the WHO Secretariat to

^b The sections on 'overall guidance' are extracted from the Overall Orientation and Guidance and updated as relevant.

^c The sections on reflection on progress are general in nature and developed by the secretariat based on stakeholder reports submitted, various data sets and other available information. It is not a comprehensive assessment.

establish a global chemicals and health network, with links to existing sub-regional, regional and international networks, to facilitate health sector implementation of The Roadmap. The network promotes collaboration on common policy challenges, perspectives and priorities of health ministries in managing chemicals and to facilitate continuity of contact among health ministries and with WHO.

16. The International Labour Organisation (ILO), through national Occupational Safety and Health (OSH) programmes in Member States, provides technical support to allow countries to strengthen their legal and regulatory frameworks. This includes promoting sound chemicals management at national level for the implementation of the ILO Chemicals Convention No. 170. All national OSH programmes include the sound management of chemicals at the workplace and are tripartite in nature where government, employer and worker organisations participate equally.

17. UN Environment signed a Memorandum of Understanding with IPEN in December 2017 to work in partnership on gender and chemicals. These efforts focus on raising awareness, promoting women's engagement and leadership in the decision-making processes as well as contributing to activities related to the Strategic Approach emerging policy issues and relevant Sustainable Development Goals (SDGs). In this context, IPEN will be working on mapping the impact of selected emerging policy issues on women and their relation to relevant SDGs. Furthermore, gender considerations have been increasingly incorporated into global multilateral environmental agreements, including the Basel, Rotterdam and Stockholm Conventions and the Minamata Convention on Mercury.

18. The International Council of Chemical Associations (ICCA) and UN Environment hosted the Symposium on Sound Management of Chemicals and Waste and the Circular Economy from 11 to 13 September 2018 in Chengdu, China^d. The Symposium was aimed at coming to a common understanding of the concept of circular economy and how facilitating circularity is closely intertwined with sound management of chemicals and waste. The Symposium provided practical examples for governments and industry on how to facilitate and implement more circular approaches, while also identifying enabling policy conditions to scale up circular approaches.

3. Looking to 2020 and beyond

19. At the fifth meeting of the ICCM5 Bureau, the Regional SAICM Focal Points noted their challenges in engaging relevant national and stakeholder focal points from countries in implementing the sound management of chemicals. During this discussion, it was suggested that the regions could consider reactivating their coordination groups that were previously established within the regions to support priority setting and SAICM implementation. Furthermore, paragraph 44 of the Overall Orientation and Guidance highlights the need for increased regional collaboration. It states that this may be accomplished by further engaging centres with a range of competencies and within their respective mandates, such as the regional centres of the Basel and Stockholm Conventions, the regional offices of the UN Environment Programme (UNEP), WHO, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Industrial Development Organization (UNIDO), the United Nations Institute for Training and Research (UNITAR), regional bureaux of the United Nations Development Programme (UNDP) and joint UNEP/UNIDO cleaner production centres.

20. Overall, active promotion of the sound management of chemicals and waste within each relevant sector and the integration of programmes across all sectors will maximize future impact. Each sector has a role to play to ensure that the adverse impacts on human health and the environment are minimized.

21. Furthermore, inclusion of the sound management of chemicals and waste in national development assistance plans and frameworks should ultimately ensure that it is a significant component of national policy frameworks, thus prioritizing the chemicals and waste agenda at the national level. This will ensure sustained focus and financing in moving forward.

^d The report of the workshop is available as document SAICM/OEWG.3/INF/17.

B. Establish and strengthen national legislative and regulatory frameworks for chemicals and waste: improving capacity to address the basic elements of the sound management of chemicals and waste and encouraging regional cooperation

1. Overall guidance

22. There is an urgent need to set and strengthen chemicals regulations and controls in a number of countries and to extend cooperation with a view to building the capacity of developing countries and countries with economies in transition for the sound management of chemicals and hazardous wastes and promoting the adequate transfer of cleaner and safer technology to those countries. Some developed countries also face challenges in meeting the 2020 goal.

23. It is critical that the Overarching Policy Strategy be implemented and, including, all, or as many as possible, of the basic elements identified, in order to achieve the sound management of chemicals and waste.

24. The enforcement of existing legal frameworks and infrastructure, and compliance mechanisms, as well as the establishment of coordinating mechanisms between the various entities involved in the value chain, are key in setting up the necessary infrastructure to eradicate illegal activities.

2. Reflections on progress

25. The Inter-Organization Programme for the Sound Management of Chemicals (IOMC) internet-based “Toolbox for Decision Making in Chemicals Management” has been updated with a new user interface which is now available. The IOMC Toolbox is aimed at countries who wish to address specific national issues regarding chemicals management. It is a problem-solving tool that enables countries to identify the most appropriate and efficient national actions to address specific national problems related to chemicals management. Use of the website by stakeholders is being supported by a series of national and regional training workshops during 2019 and 2020, as well as a series of webinars on the Toolbox including related toolkits and tools^e.

26. The Quick Start Programme (QSP) project portfolio, which is scheduled to wrap up in 2019, comprises of 184 approved projects with an approximate value of \$37 million. The programme spans 108 different countries including 40 countries in Africa, 30 countries in the Asia-Pacific, 28 countries in Latin America and the Caribbean and 10 countries in Central and Eastern Europe. Of these countries 54 were least developed countries and small island developing states. The QSP Impact Evaluation, as outlined in document SAICM/ICCC.4/INF/5, concluded that the QSP demonstrably met, and in many cases exceeded, its objective of establishing enabling environments for sound management of chemicals at the national level. All three of the Strategic Priorities have been addressed, with priorities A (national profiles) and B (strengthening institutions) being addressed by a majority of countries, while priority C (mainstreaming) was addressed by a smaller, but significant, number of projects.

27. The SAICM secretariat has recently developed a mapped database of all QSP projects that is available on the SAICM website^f.

28. The Special Programme was set up to support country driven institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention on Mercury and SAICM in the context of the integrated approach to address the financing of the sound management of chemicals and wastes^g. It takes into account the national development strategies, plans and priorities of each country, to increase sustainable public institutional capacity for the sound management of chemicals and wastes throughout their life cycle. The Special Programme is currently funding 42 projects, as outlined in figure 1. At its second meeting, the Executive Board of the Special Programme approved seven projects in Argentina, Benin, the Dominican Republic, Iraq,

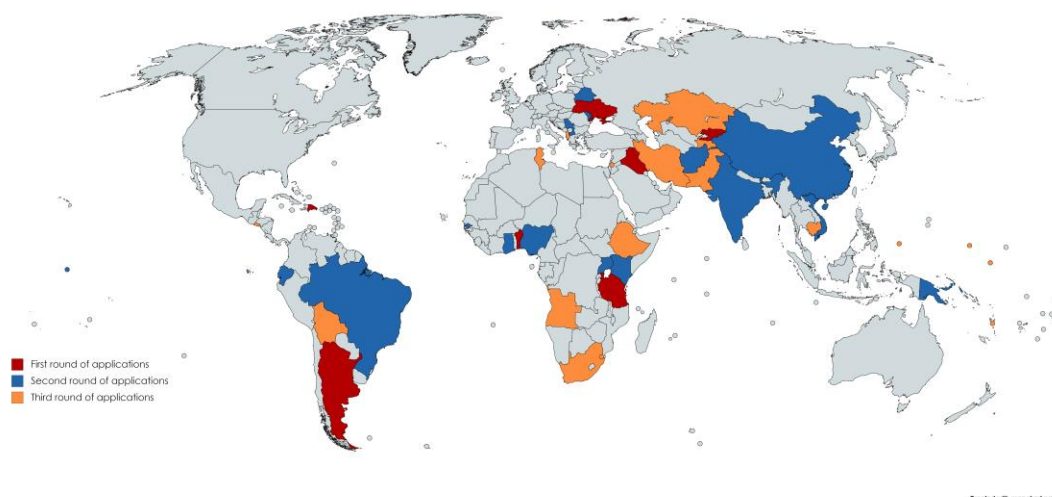
^e More information available at <https://iomctoolbox.oecd.org/>.

^f More information available at <http://www.saicm.org/Implementation/QuickStartProgramme/QSPVisualization/tabid/7956/language/en-US/Default.aspx>

^g More information available at <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/special-programme>

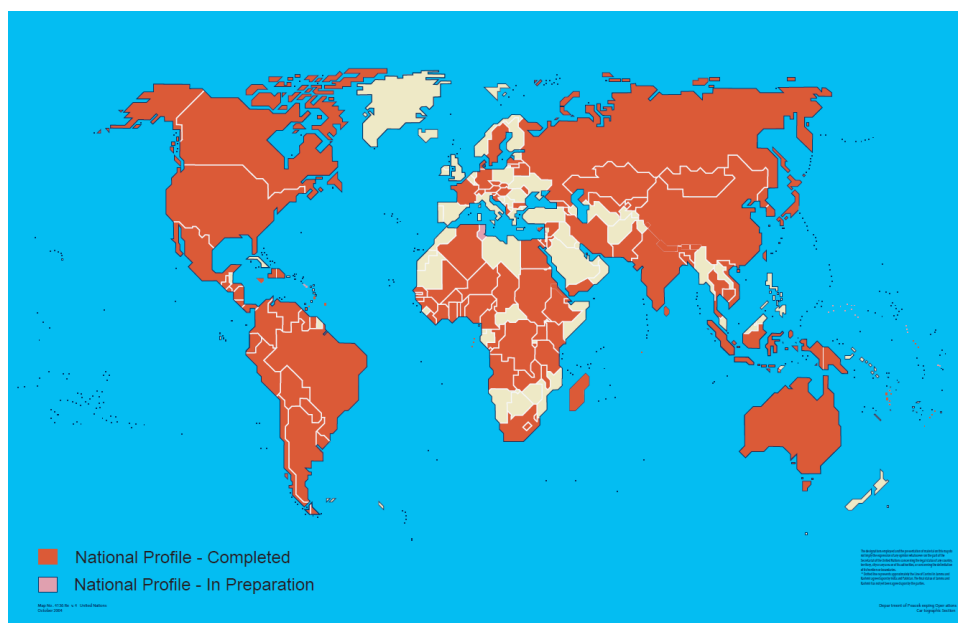
the Kyrgyz Republic, Tanzania, and Ukraine following the first and pilot round of applications for funding from the Special Programme. At its third meeting, the Executive Board approved seventeen projects in Afghanistan, Belarus, Brazil, China, Ecuador, Former Yugoslav Republic of Macedonia, Gambia, Ghana, India, Kenya, Kiribati, Nigeria, Papua New Guinea, Republic of Moldova, Serbia, Uganda and Viet Nam. At its fourth meeting, the Executive Board approved 18 projects in Albania; Angola; Bolivia (Plurinational State of); Cambodia; Ethiopia; El Salvador; Eswatini; Iran; Kazakhstan; Micronesia (Federated States of); Nauru; Pakistan; Palau; State of Palestine; South Africa; Tajikistan; Tunisia; and Vanuatu.

Figure 1: Map of countries that have received funding from the Special Programme.



29. National Profiles have served as a useful basis for identifying national chemicals management priorities and for initiating targeted and coordinated follow-up action. In countries with advanced national chemical management schemes, National Profiles have pulled together into one document a wide range of information about national activities and programmes in the area of national chemicals management and thus contribute to both the national and international exchange of information about these activities. Figure 2 represents the countries with national profiles for chemicals, based on information from UNITAR^h. Approximately 80 projects funded by the QSP directly supported the development or updating of national chemical profiles and the identification of capacity needs for sound chemicals management, under QSP strategic priority A.

^h More information available at http://cwm.unitar.org/national-profiles/nphomepage/np3_region.aspx

Figure 2: Global Status of National Profiles (UNITAR)

30. With respect to Key Area 1 of the basic elements ‘Legal and institutional frameworks, implementation and enforcement’:

- a) In reporting to the SAICM secretariat, many countries noted the development of legal frameworks that address the life-cycle of chemicals and waste.
- b) With respect to institutional frameworks and coordination, many of the governments that reported on implementation of the Overall Orientation and Guidance to the secretariat indicated that they host regular meetings of inter-agency and multi-stakeholder chemicals management advisory groups. They also reported involving stakeholders in the development and implementation of legislation by various means.
- c) With respect to the ratification of the chemicals and waste-related multilateral environmental agreements: there are 187 parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; 161 Parties to the Rotterdam Convention; and 182 Parties to the Stockholm Convention. There are currently 105 Parties to the Minamata Convention on Mercury, which entered into force in 2017.

31. The International Code of Conduct on Pesticide Management, developed by FAO/WHO, provides standards of conduct as well as guidance for all public and private entities engaged in, or associated with, the management of pesticides. The Code of Conduct is especially useful for countries where inadequate, outdated or even no national legislation to regulate pesticides is available, as outlined in the Guidelines on Legislation. Figure 3 highlights all the countries which have pesticide legislation implemented on the basis of the Code of Conduct (FAO, February 2018). The green colour represents countries where there is effective legislation whereas countries depicted in red indicates that no legislation has been implemented yet. No information is available from countries represented by a grey colour.

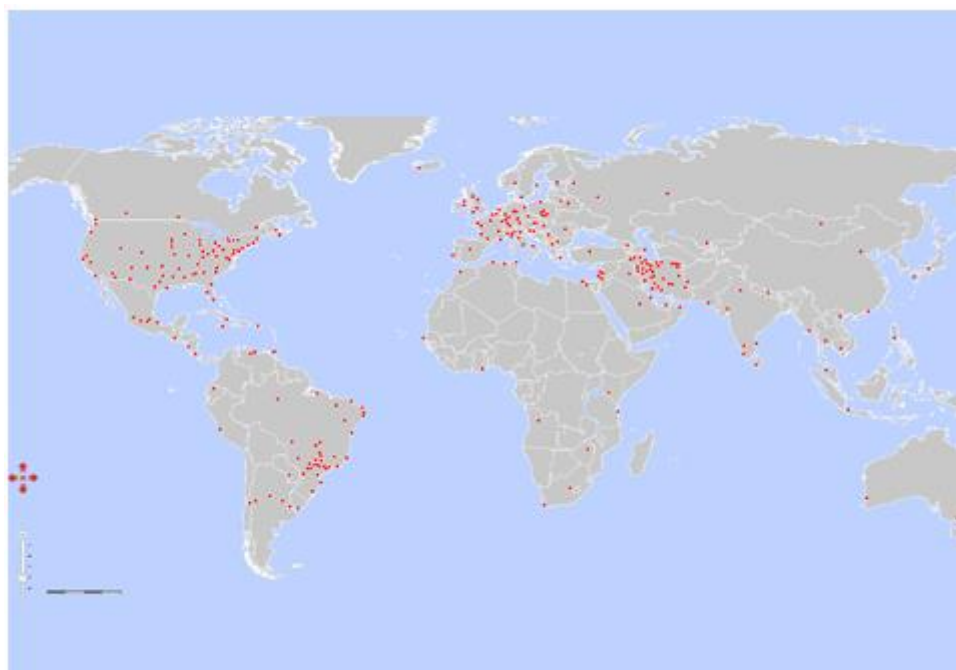
Figure 3: World Map of Pesticide Legislation

32. In addition, for pesticide legislation and related efforts, stakeholders reported:
 - a) The Africa region noted the Economic Community of West African States Directive on Pesticides as an available and planned risk reduction and information sharing tool;
 - b) PAN UK highlighted that they are producing information on alternatives to specific highly hazardous pesticides in specific crops, aimed at national decision makers and non-governmental organisations;
 - c) CropLife indicated that they have developed a range of materials available for public download on the CropLife webpage that covers all critical aspects of the sound management of pesticides such as: Storage & transportation, responsible use, personal protective equipment, resistance management, contamination prevention, integrated pest management, etc. Two examples initiated in 2013 of key stewardship initiatives aimed to exemplify the scope, commitment and stakeholder engagement by the Crop Protection Industry were highlighted: (1) Honduras partnership project: CropLife Latin America partnership with the United States Agency for International Development (USAID) to train Honduran farmers in good agricultural practices; and (2) Cocoa in West Africa partnership project: CropLife Africa Middle East entered into a two year partnership with the World Cocoa Foundation to train professional Spray Service Providers in Ivory Coast, Ghana, Nigeria and Cameroon.
33. The OECD Council Acts related to chemical safety form a comprehensive legal framework that addresses the life cycle of chemicals. Activities to ensure the continued relevance of these acts are ongoing. Development of a best practice guidance to stop illegal trade of pesticides is currently underway.
34. With respect to Key Area 2 of the basic elements 'Stakeholder participation and sectoral engagement':
 - a) For industry participation and defined responsibility across the life cycle, industry reported the following information in their report to the secretariat:
 - i. The ICCA reported that the proper stewardship of chemical across their life cycle is an inherent element of the Responsible Care Global Charter and Global Product Strategy.
 - ii. CropLife International reported that their approach towards stewardship is to provide guidance documents, resistance management, and promote a commitment towards the Code of Conduct and Highly Hazardous Pesticides as part of shared responsibilities by

all CropLife International members. These responsibilities are incorporated into members' respective corporate policies and practices.

- iii. The American Petroleum Institute (API) established Environmental Principles that incorporate concepts of sound chemical management. Under API's Environmental Principles, API members, as a condition of their membership, pledge to manage their businesses using sound science to prioritize risks and to implement cost-effective management practices. In addition, API reported that many API members voluntarily engage in sustainability reporting based on the Oil and Gas Industry Guidance on Voluntary Sustainability Reporting.
 - iv. Colombia reported that the Ministries of Health, Labour, Trade and Industry, and Environment, have designed a program for the management of chemical substances for industrial use, which would complement the existing regulations and mechanisms for the control of other substances and products such as pesticides. This program was structured based on the guidelines of the IOMC Toolkit.
- b) Efforts have been made to strengthen capacity to prevent, prepare for and respond to chemicals accidents, including institutional-strengthening for poison centres. According to the WHO, as of September 2017, only 46% of Member States had a poison centre, with the most notable gaps being in the African, Eastern Mediterranean and Western Pacific regionsⁱ. Figure 4 provides a general overview of poison centre locations globally. Eight projects funded by the QSP supported efforts on poison control centres and / or on poisoning information.

Figure 4: WHO World directory of poison centers, as of September 2017



3. Looking to 2020 and beyond

35. The basic elements and measures to strengthen national legislative and regulatory frameworks on chemicals and waste will remain relevant beyond 2020. There is a need to increase efforts to establish and strengthen national legislative and regulatory frameworks for chemicals and waste.

36. Stakeholders may wish to reflect on relevant milestones for achieving progress in this area beyond 2020. Regions may also wish to reflect on regional progress and promote regional progress.

ⁱ Source: https://www.who.int/gho/phe/chemical_safety/poisons_centres_text/en/

C. Mainstream the sound management of chemicals and waste in the sustainable development agenda: advancing risk reduction and enhancing the link between the sound management of chemicals and waste and health, labour, and social and economic development planning, processes and budgets

1. Overall guidance

37. The 2030 Agenda for Sustainable Development presents an opportunity to reinforce links between development and the sound management of chemicals and waste beyond 2020. Mainstreaming the sound management of chemicals and waste into national development plans in developing countries and into international development assistance priorities will contribute to the reshaping of budgets, allowing for the possibility of national and international financing for the sound management of chemicals and waste. The benefits of action and the cost of inaction will justify greater investment in this area.

38. Actions taken to strengthen the sound management of chemicals and waste should be designed, financed and implemented with sustainability in mind, also bearing in mind that project funds are finite while ongoing enforcement, monitoring and capacity development are essential to effective mainstreaming.

2. Reflections on progress

39. Political leadership, outreach, education and promotion are important to advance progress for the sound management of chemicals. One of the basic elements identified in the Overall Orientation and Guidance is the inclusion of the sound management of chemicals and waste in national health, labour, social, environment, agriculture, fisheries, forestry, research, education and economic budgeting processes and development plans. A number of countries reported progress in this area, for example:

- (a) Barbados noted that they incorporated the action plans produced through various QSP projects into the annual work programme of the Environmental Protection Department and developed a national chemicals management policy;
- (b) Brazil indicated that the chemicals management agenda was inserted into the federal government's budget planning and into the strategic plan of the ministry of the environment with targeted goals (for example amounts of obsolete pesticides and PCBs to be disposed and monitoring of environmental contamination with pesticides);
- (c) Canada reported that on behalf of the Auditor General of Canada, the Commissioner of the Environment and Sustainable Development provides parliamentarians with objective, independent analysis and recommendations on the federal government's efforts to protect the environment and foster sustainable development. The Commissioner conducts performance audits of the federal government efforts and is responsible for assessing whether federal government departments are meeting their sustainable development objectives, and overseeing the environmental petitions process;
- (d) Costa Rica reported that one of the most important efforts of the Technical Secretariat of Coordination for the Management of Chemical Substances was the drafting of the Decree of the Chemical Safety Policy of Costa Rica, which is in the process of being signing. Costa Rica is also elaborating a National System for Integral Waste Management.
- (e) Côte d'Ivoire noted the development of a Budgeted Action Plan for their Chemicals Management Strategy.
- (f) The EU and its 28 member states noted that the sound management of chemicals is addressed to a certain degree in all relevant sectors, for example agriculture, health, labour, industry and water, amongst others. However, some gaps still need to be addressed in order to further improve chemicals management and thereby the level of protection. The seventh Environmental Action Programme for the European Union includes a number of actions on chemicals, including the development of a non-toxic environment strategy. Those actions address, amongst other things, the following aspects: (1) More targeted investments: Adequate

investments and innovation in products, services and public policies from public and private sources; (2) More effective integration of environmental concerns into other policy areas, such as regional policy, agriculture, fisheries, energy and transport will ensure better decision-making and coherent policy approaches that deliver multiple benefits. The EU and its 28 member states cooperate very closely with all relevant international bodies and provide important support to their work by, amongst other things, making available financial resources, for example for the technical assistance programmes of the respective instruments and for development of the IOMC Toolbox and the Special Programme on Institutional Strengthening;

- (g) Mexico reported that at the beginning of each federal governmental administration, a national development plan, which defines the guidelines under which the government's work is done, is established. The current administration has included in its development plan aspects aimed at combating poverty, ensuring water quality, health and food security and has indicators to assess their performance.

40. Over 60 projects funded through the QSP addressed the Programme's strategic priority C – to undertake analysis, interagency coordination, and public participation activities to enable the implementation of the strategic approach by “mainstreaming” the sound management of chemicals into national strategies.

41. UNDP country-level activities utilize the national implementation modality, thereby enhancing country ownership. In addition, project management arrangements always ensure the involvement of relevant actors from various sectors. UNDP-supported activities utilize integrated financing by drawing on global, bilateral, national, and private sector funding. In order to ensure the sustainability of project activities, the project objectives address strengthening institutional arrangements and capacity for chemicals and waste management in countries^j.

42. The Executive Director of UNEP undertook an evaluation of the implementation of the integrated approach to financing the sound management of chemicals and waste, as outlined in document SAICM/OEWG.3/INF/11. The overarching purpose of the evaluation was to assess the effectiveness of the implementation of the integrated approach with the aim of assessing how the integrated approach has contributed to the implementation of the chemicals and waste activities and to inform future refinements and adjustments to the integrated approach. With respect to mainstreaming, the evaluation highlighted that to the best of the interviewed stakeholders' knowledge, there was no ongoing, scaled monitoring of the financial and in-kind contributions being triggered by the various mainstreaming initiatives. The evaluation also noted that information on mainstreaming contributions were obtained through the SAICM progress reporting process.

3. Looking to 2020 and beyond

43. Mainstreaming the sound management of chemicals and waste underpins progress towards each of the five objectives of the Overarching Policy Strategy and is one of the three elements in the integrated approach to financing for the sound management of chemicals and waste. It is an important aspect in ensuring the sustainability and progress towards the sound management of chemicals and waste.

44. The evaluation of the integrated approach, noted above, may provide useful guidance to stakeholders in looking beyond 2020. In particular, the report indicates the need to strengthen the chemicals and waste agenda in the implementation of the 2030 Sustainable Development agenda, beyond the current focus on SDG12. In developing future policy approaches, in particular with respect to mainstreaming and national action, real and effective linkages need to be made to integrating mechanisms like the United Nations Development Assistance Frameworks.

^j Related guidelines are available at:
www.undp.org/content/dam/undp/library/corporate/Programme%20and%20Operations%20Policies%20and%20Procedures/NIM_for_Government_english.pdf .

D. Increase risk reduction and information sharing efforts on emerging policy issues: continuing to promote actions on issues not currently addressed in existing agreements, complementing initiatives taken by other bodies

1. Overall guidance

45. Emerging policy issues have been identified by ICCM, which provide a unique global framework for identifying, promoting and advancing chemical safety objectives. The emerging policy issue process demonstrates the broad scope and potential effects of activities that can be undertaken under the Strategic Approach since, thanks to its non-binding nature, it offers a forum in which the risks of emerging policy issues and measures to deal with them can be considered. This leads to increased awareness and national, regional and global responses.

46. The emerging policy issues identified by ICCM to date are lead in paint, chemicals in products, hazardous substances within the life cycle of electrical and electronic products, nanotechnologies and manufactured nanomaterials, endocrine-disrupting chemicals and environmentally persistent pharmaceutical pollutants. In addition, managing perfluorinated chemicals and the transition to safer alternatives, and highly hazardous pesticides have been identified as issues of concern.

47. The emerging policy issues under the Strategic Approach offer the prospect of addressing large groups of chemicals at the same time, marking a shift from a chemical-by-chemical approach to a more general one that identifies and manages the risks of groups of chemicals, such an approach is conducive to significant progress towards the 2020 goal and beyond. Accordingly, in addressing emerging policy issues, Strategic Approach stakeholders should first consider the extent to which those issues would already be addressed through the implementation of components of the existing Global Plan of Action. Any gaps identified following such a consideration should be documented and specific actions developed.

2. Reflections on progress

48. The secretariat prepared the report 'Emerging policy issues and other issues of concern' as outlined in document SAICM/OEWG.3/6 for the Working Group. A number of related information documents are also available to participants, including: Emerging policy issues - IOMC response to requests from the fourth session of the International Conference (document SAICM/OEWG.3/INF/9); and a Submission of UN Environment and the World Health Organization: The promotion of lead paint laws and enhanced actions towards 2020 (document SAICM/OEWG.3/INF/20).

49. In its resolution IV/2, the Conference invited the Global Environment Facility (GEF), within its mandate, to support the implementation of the Conference resolutions on all emerging policy issues and to continue that support in its seventh replenishment of the GEF trust fund. The GEF has approved an 8.19 million USD project on the theme "Global best practices on emerging chemical policy issues of concern under the Strategic Approach to International Chemicals Management". Furthermore, an additional 21 million USD in project co-financing were leveraged from multiple bilateral donors and non-governmental sources. The aim of this global project is to accelerate progress and measure the adoption of national activities on emerging policy issues to achieve the Strategic Approach goal by 2020 and to support planning for chemicals management in the context of the 2030 Agenda for Sustainable Development. The project will be implemented in over 40 countries over a 4-year period with the aim of presenting early project results at the fifth session of the Conference, in 2020. The GEF unit in UNEP is the implementing agency and the Strategic Approach secretariat is the executing agency. The project focuses on three work components: lead in paint, chemicals in products, and strategic planning and knowledge management. The project was approved for implementation by GEF on 7 August 2018, and the project was launched at its inception meeting was held from 15 to 16 January 2019.

50. In addition, a proposal for a medium-sized project was submitted to GEF on 11 October 2018 for review and approval of its Chief Executive Officer. With a budget of \$2 million, the project is to be implemented in 11 countries over a 4-year period. It will focus on environmentally persistent pharmaceutical pollutants, endocrine-disrupting chemicals and highly hazardous pesticides. The GEF unit of UNEP is the proposed implementing agency and the Strategic Approach secretariat is the proposed executing agency. Key project partners include FAO, WHO and UNEP.

51. With respect to Lead in Paint, 71 countries confirmed that they have legally binding controls on lead in paint, as of September 2018, as outlined in figure 5.

Figure 5: Countries with Confirmed Lead Paint Laws in Each UN Environment Region as of September 2018 (from SAICM/OEWG.3/INF/20).

Africa	Asia and the Pacific	West Asia	Europe			Latin America and the Caribbean	North America
Algeria Cameroon* Ethiopia* ^{AA} Kenya South Africa United Republic of Tanzania	Australia China India Nepal New Zealand Philippines Sri Lanka Thailand	Jordan Iraq* Oman	Armenia Austria Belarus Belgium Bulgaria Croatia Cyprus Czech Republic Denmark Estonia Finland France Germany Greece Hungary Iceland Ireland Italy	Kazakhstan* Kyrgyzstan Latvia Liechtenstein Lithuania Luxembourg Malta Monaco Montenegro Netherlands Norway Poland Portugal Romania Russian Federation Serbia Slovakia	Slovenia Spain Sweden Switzerland The Former Yugoslav Republic of Macedonia United Kingdom	Argentina Brazil Chile Costa Rica Cuba Dominica Guyana Mexico Panama Trinidad and Tobago Uruguay	Canada United States

*New since 1 October, 2017

^{AA}The law has been passed, but it has not been put into force

*Status change in WHO database

52. The Chemicals in Products Programme is discussed under Section E of the current document.

53. With respect to hazardous substances in the lifecycle of electronics, UNIDO has highlighted in their submission to the secretariat in document SAICM/OEWG.3/6, that important gaps remain in achieving the 2020 goal, including: (a) the current focus of the workplan being on the upstream level, which requires streamlining discussions with electrical and electronic equipment manufacturers to provide them with information regarding the use of hazardous substances in electrical and electronic equipment, which in turn is essential for requesting them to enhance the environmentally friendly design of such equipment; (b) the lack of funding from Strategic Approach stakeholders to tackle the activities stated in the workplan for the period 2016–2020.

54. The mandates of four of the emerging policy issues and other issues of concern are linked to science, knowledge, information and awareness raising, specifically: nanotechnologies and manufactured nanomaterials (2009), endocrine-disrupting chemicals (2012); environmentally persistent pharmaceutical pollutants (2015); managing perfluorinated chemicals and the transition to safer alternatives (2009). Figure 6 below provides an overview the four emerging issues, the leading organizations and summarizes the ICCM mandates assigned for each issue. In reviewing the ICCM mandates assigned, common requests have emerged for each of these issues, including increased awareness and understanding, generating knowledge and facilitating knowledge sharing.

Figure 6: Emerging science related emerging policy issues and other issues of concern

55. Overall, with regards to emerging policy issues, OECD reported that they continuously identify emerging policy issues and set up cooperative programmes for countries to address these issues. Current and future activities include: (i) development of Test Guidelines and guidance for identifying endocrine disruptors. The detailed action plan is outlined in document SAICM/ICCM.4/INF/20; (ii) development of Test Guidelines and guidance for assessing the risks of manufactured nanomaterials for human health and the environment. The detailed action plan is outlined in document SAICM/ICCM.4/INF/19; (iii) information exchange on alternatives to perfluorinated chemicals, The detailed action plan is outlined in document SAICM/ICCM.4/INF/21; (iv) promotion of integrated pest management as a means for risk reduction; (v) development of best practices in the fight against illegal trade of pesticides; (vi) piloting of the feasibility of establishing a global list of classifications according to the Globally Harmonized System of Classification and Labelling of chemicals (GHS); (vii) development of methodologies to assess the risks of chemicals to children; (viii) development of methodologies to assess the risks from the combined exposure to multiple chemicals; (ix) development of guidance to prevent chemical accidents due to ageing as well as changes in ownership of high-hazard installations.

56. With respect to highly hazardous pesticides (HHP), some information received in the submissions to the secretariat includes:

- FAO leads the work on pesticide risk reduction through the enhancement of regulatory control and the promotion of Integrated Pest Management. Highly Hazardous Pesticides are now a new focus area. Guidelines on HHPs have been published and a Pesticide Registration Toolkit was launched to enable authorities to register HPPs with the view to improving hazard and risk assessment. Furthermore, special initiatives addressing HHPs are being launched at national and regional levels.
- PAN International highlighted that they are publishing and making available to all sectors in all regions a review of the independent science on adverse impacts of glyphosate. IRET at the Costa Rican National University is producing a briefing in Spanish on the HHP approach to risk and use reduction to explain the concept to stakeholders in government agencies and the agriculture sector in Costa Rica. PAN UK is raising awareness of the FAO/WHO HHP approach with private food standards, manufacturers and retail companies to encourage them to make use of the recently published HHP guidelines in their pesticide policies.
- CropLife International and its members have reported that they have developed and promoted strategies for training stakeholders, including farmers and trainers, for more than 40 years. The CropLife network works locally with over 300 partners around the world. In doing so, they

have reported upon a number of initiatives. CropLife International has developed a number of guidelines, training manuals, posters and leaflets for use in stewardship programs^k.

3. Looking to 2020 and beyond

57. With eight emerging policy issues and issues of concern raised since 2009, there are many lessons learned to reflect upon in moving forward. Areas to scale-up efforts and streamline, as relevant, to address emerging policy issues should be determined with a view to increase risk reduction and information sharing.

E. Promote information access: increasing the accessibility of relevant information and making it understandable for all levels of society

1. Overall guidance

58. The Strategic Approach fosters a strengthened science-policy interface and promotes transparent cooperative actions on global priorities, including voluntary industry initiatives, product stewardship, green chemistry and information exchange. International and regional cooperation, including sharing data between countries, provides an effective and cost-efficient means for strengthening chemicals and waste management.

59. One prerequisite for a well-functioning chemicals control is the availability of data and knowledge on the impact of substances on the environment and health. Based on the right information on the hazards and distribution of chemicals, both industry and governmental authorities can fulfil their respective responsibilities to contribute to sustainable development. In this context, implementing the Globally Harmonized System of Classification and Labelling of Chemicals is among the most important measures a country can undertake, as it provides information on the hazards along the supply chain for chemical products. Chemical hazard and risk reduction information for manufactured products is not covered by the Globally Harmonized System: this information could be made available through the chemicals in products programme. The Organization for Economic Cooperation and Development Global Portal to Information on Chemical Substances (eChemPortal)^l is accessible globally and provides another source of chemical hazard data.

60. The absence of an information clearing house has had major implications for and impacts on mainstreaming, implementation and capacity-building efforts. The full use of a more developed and sustained system for sharing relevant health and safety information, while ensuring that proprietary information is appropriately protected, is required in order to encourage all stakeholders to increase their contributions and exchange information. A Strategic Approach clearing house for sharing efforts related to the 11 basic elements is of particular importance.

2. Reflections on progress

61. This section of the report focuses on reporting on Key Area 3 of the basic elements 'Knowledge and information, risk assessment/reduction and monitoring'. The basic elements linked to Key Area 3 include: collection and systems for the transparent sharing of relevant data and information among all relevant stakeholders using a life cycle approach; chemicals risk assessment and risk reduction through the use of best practices; monitoring and assessing the impacts of chemicals on health and the environment; and development and promotion of environmentally sound and safer alternatives.

62. In terms of GHS implementation, 50 countries (26% of UN member States) have fully implemented GHS in their national legislation, 15 countries (8%) have partially implemented, and 128 countries (66%) had not yet implemented GHS as of April 2017, as shown in Figure 7.

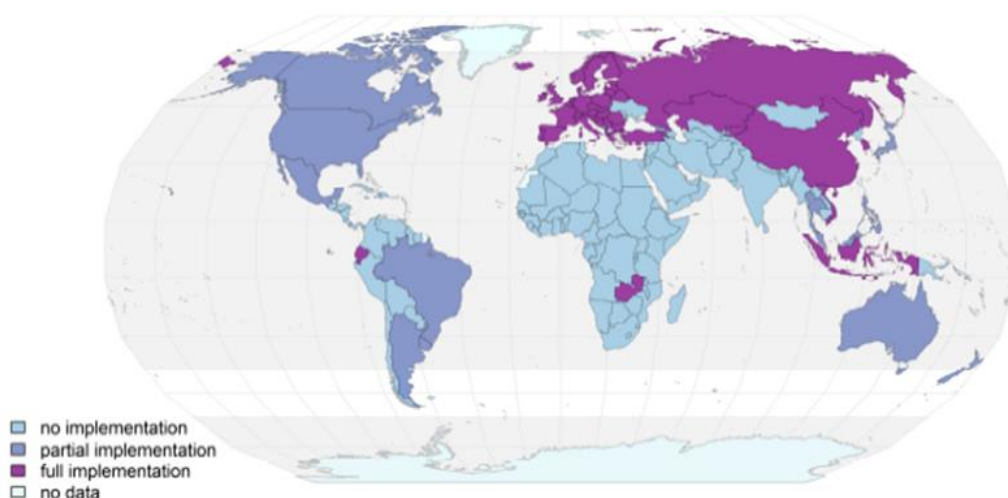
63. The QSP directly supported 24 projects on the labelling of chemicals according to internationally harmonized standards and on the assessment and strengthening of national and regional

^k Available at <http://croplife.org/crop-protection/stewardship/stewardship-training-materials/> and can be translated and adapted to local conditions.

^l Available from: www.oecd.org/chemicalsafety/risk-assessment/echemportalglobalportaltoinformationonchemicalsubstances.htm.

capacity for implementing the Globally Harmonized System. Recipient countries include: Bahrain, Barbados, Benin, Bolivia, Cameroon, Chile, Colombia, Democratic Republic of the Congo, DPR Korea, Gambia, Guatemala, Haiti, Kyrgyz Republic, Madagascar, Mali, Mexico, Moldova, Republic of Guinea, Republic of Tunisia, Tajikistan, The Republic of Congo, Togo, Uzbekistan and Zambia

Figure 7: World map of current GHS implementation^m



64. The Chemicals in Products programme was welcomed by ICCM5 as a voluntary framework for all Strategic Approach stakeholders. The aim was to facilitate cooperation with existing information system initiatives and standards with a view to learning, sharing best practices and avoiding duplication of effort. It points to the advantages for stakeholders that information systems and related initiatives on information exchange on chemicals in products throughout their life cycles have for supply chain actors, workers, consumers and other relevant stakeholders.

65. IPEN reported producing a number of publications linked to chemicals in products, in particular toxics in toys, including “Toxic toy or toxic waste: Recycling POPs into new products”ⁿ.

66. Colombia reported on the process of accession to the OECD, which includes the adoption of measures to implement the legally binding decisions of that organization in the matter of chemical products.

67. The United Nations Economic Commission for Europe reported on the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters provides for the right of everyone to receive environmental information that is held by public authorities; the right to participate in environmental decision-making; and the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general.

68. The SAICM secretariat has developed a Knowledge Management Strategy that outlines an approach to create, identify, document, strengthen, and disseminate knowledge-intensive activities for chemicals of concern to 2020 and beyond as outlined in document SAICM/OEWG.3/INF/31. The Strategy contributes to the implementation of the SAICM GEF project - Global Best Practices on Emerging Policy Issues of Concern under the Strategic Approach (9771). Four objectives have been identified for SAICM Knowledge Management: (i) Sharing knowledge and information on the sound management of chemicals and emerging policy issues; (ii) Tracking progress of SAICM implementation, in particular on emerging policy issues; (iii) Fostering an enabling environment to share and disseminate knowledge; and (vi) Involving strategic partners and joint approaches at the global and local level. Funds have been secured to build collaboration and engagement with the SDG and scientific communities to promote emerging policy issues and to establish a knowledge

^m Persson et al, 2017, Sustainability 2017, 9, 2176; doi:10.3390/su9122176

ⁿ Available at <http://www.ipen.org/documents/toxic-toy-or-toxic-waste-recycling-pops-new-products>.

management platform that provides a repository of information and forum for exchange of scientific and policy information.

69. The Basel, Rotterdam and Stockholm Conventions promote access to information as follows: (i) Monitoring data collected under the Stockholm Convention on persistent organic pollutants are accessible via the electronic data warehouse; (ii) Guidance, factsheets and assessment reports on the chemicals and alternatives to the chemicals listed under the Stockholm Convention developed on the basis of the information collected from Parties and other stakeholders; (iii) Decision guidance documents on chemicals listed under the Rotterdam Convention and the prior informed consent circulars, published every six months containing information on national decisions related to imports on those chemicals; (iv) National reporting information submitted by Parties on the national measures undertaken to implement the Conventions, the amount of POPs produced, used, traded, released; the amount of wastes generated and subject to transboundary movements; (v) National legal frameworks to implement the Basel Convention and national definitions of hazardous wastes and other wastes; (vi) Further relevant information is shared via Basel, Rotterdam and Stockholm Conventions web pages and the Conventions' clearing-house mechanism.

70. As part of the implementation of the Libreville Declaration and the mainstreaming of the sound management of chemicals into development policies, the GEF Council approved a 5 year, 10.5 million USD project proposal from the UNEP Chemicals and Health Branch for the development of an integrated health and environment Observatory (ChemObs) for sound management of chemicals in nine countries in Africa (Ethiopia, Gabon, Kenya, Madagascar, Mali, Senegal, Tanzania, Zambia, Zimbabwe), working closely with the WHO. The Africa ChemsObs project aims at developing an integrated guidance to build capacity necessary to set up an integrated health and environment observatory surveillance and information management system that will enable African countries to establish evidence-based policies and make sustainable decisions on sound management of chemicals and related disease burdens. This project supports the development of national observatories, capacity building of staff, support to identify causal pathways, risk ranking and priority settings, and activities to break links in causal pathways, thereby improving health and environment outcomes. At national level, national country team are working on the institutional arrangements of the ChemObs, while progress is made on the overall development of the Decision-Making Tools package. Consultation is ongoing among countries, international experts and UNEP MapX team in designing a data collection and management system that will connect information and knowledge of the various government agencies and entities that deal in a direct or indirect way to the sound management, to follow and reflect the chemicals full life cycle management. A first draft architecture of the Decision-Making Tools platform with its constitutive elements will be provided for review and discussion to the 2nd Scientific and Technical committee meeting that will be held in November 2019.

71. Looking at some examples of the development and promotion of environmentally sound and safer alternatives, as outlined in basic element 9, the stakeholders included within their submissions the following:

- (a) The European Union noted the ECHA project "Improving the Analysis of Alternatives and practical ways of promoting innovation and substitution in the EU"^o.
- (b) Iran (Islamic Republic of) reported that finding alternatives to hazardous chemicals in products is crucial. Green chemistry and safe alternatives should be encouraged and supported through technology transfer to developing countries and countries with economic in transition.
- (c) PAN reported new guidance material available on Using the Food Spray Method to Enhance Biological Control in Cotton: A Trainers Guide'. Method is suitable for organic, Integrated Pest Management (IPM) and Bt cotton to reduce reliance on insecticides for cotton pest control. They also highlighted that PAN UK with PAN Ethiopia are developing an IPM Toolkit for cotton, including videos, to build capacity among public sector extension agents to deliver effective IPM training for reduced pesticide use (to be ready in 2018). Furthermore, they noted that IRET at the Costa Rican National University is trialling biological and other non-chemical alternatives to highly hazardous pesticides nematicides in pineapple and to HHP fungicides in coffee, results available in 2017.

^o The conclusions and recommendations from University of Massachusetts Lowell are available at ECHA's website: https://echa.europa.eu/documents/10162/13630/substitution_capacity_lcsp_en.pdf/2b7489e1-6d96-4f65-8467-72974b032d7b

- (d) For industry: ICCA reported that they cannot comment on this basic element due to competition laws. The American Petroleum Institute noted that many member companies are investing in active research and development of products with potential environmental benefits, e.g., biofuels, alternate sources of fuels, environmentally preferable solvents and other products, and environmentally preferable chemicals for use in petroleum operations such as hydraulic fracturing. CropLife International highlighted that they are very active in the promotion and trainings on IPM principles. CropLife International has established a specific Project team that deals with Biologicals, their registration requirements, safe use and stewardship as well the development of specifications. Biologicals are an integral part of developing solutions for crop protection in concert with established tools.

3. Looking to 2020 and beyond

72. Actions in the activity area promote the application of preventative measures such as pollution prevention; aim to make available science-based standards, risk-management procedures and information-sharing; and strengthen capacity at the national and regional levels for the exchange of relevant information aimed at the prevention and control of the illegal international traffic in chemicals and hazardous wastes.

73. Stakeholders may wish to provide feedback to the SAICM secretariat on the Knowledge Management Strategy set out in document SAICM/OEWG.3/INF/31 with the view to giving guidance on information sharing and dissemination moving forward. Stakeholders are also invited to develop, identify and share relevant information and databases with the SAICM Secretariat to contribute actively to the knowledge management activities of SAICM.

74. Stakeholders may wish to reflect on relevant milestones for achieving progress in this area beyond 2020.

F. Assess progress towards the 2020 goal of minimizing the adverse effects of chemicals on human health and the environment: identifying achievements, understanding the gaps in implementation and prioritizing actions for achievement by 2020

1. Overall guidance

75. In order to secure the necessary level of political support and financing to achieve the 2020 goal of sound management of chemicals, it is essential to demonstrate credible and continuous progress at the national, regional and international levels.

76. The Strategic Approach secretariat has developed periodic reviews on the implementation of the Strategic Approach by stakeholders for consideration by ICCM using the 20 indicators of progress agreed upon by the ICCM at its second session. A number of Strategic Approach stakeholders have made helpful contributions towards evaluating progress in implementation of the Strategic Approach.

2. Reflections on progress

77. In line with ICCM Resolution IV/1, the secretariat has developed a report on progress towards the implementation of the Strategic Approach to International Chemicals Management for 2014–2016, as outlined in document SAICM/OEWG.3/INF/4, and a summary of the report on progress, as outlined in document SAICM/OEWG.3/5. The summary report is available in all six official United Nations languages. The report provides a comparison of the results of the SAICM online questionnaire tool with the two previous reports; 2009-2010 progress report (PR1) and 2011-2013 progress report (PR2). It also makes a general comparison with the baseline report (2006-2008), under the relevant indicators to draw a more comprehensive picture of the progress. The global reporting rate of 28% represents a significant decline as compared to previous reporting periods. At the regional level a decrease between 6 to 70% in reporting rates was observed as compared to PR2 therefore making it difficult to draw a reliable global picture of progress.

78. In addition, PR2 included data collected by the IOMC on the eight indicators of progress in the implementation of Strategic Approach for the first time. Including this data in the report proved to be of value (a) to complement or cross-reference the data collected through the SAICM questionnaire;

and (b) to give a better picture of the global progress toward the sound management of chemicals under some of the SAICM key indicators of progress. The IOMC is also in the process of developing a new indicator on the number of countries that have legislation in place to manage industrial and consumer chemicals in an initiative led by the OECD, as outlined in document SAICM/OEWG.3/INF/18. This indicator would be helpful to address industrial and consumer chemicals.

79. The 20 SAICM indicators of progress were agreed to in 2009 at ICCM2 as a means of reviewing the performance of countries progress towards each of the five Overarching Policy Strategy objectives. The indicators have proven to be user-friendly, simple and straightforward as equally noted in the draft report of the independent evaluation of the Strategic Approach from 2006 to 2015. At the same time, the indicators of progress at their current status do not fully capture the new or emerging policy issues. In their current state they are not likely the most effective means of assessing the progress toward the sound management of chemicals and waste towards and beyond 2020.

80. The World Health Organization has submitted a report on the progress towards the implementation of the Strategic Approach for the period 2014-2016, as outlined in document SAICM/OEWG.3/INF/26. The report focuses on the progress made in implementing the Strategy on strengthening the engagement of the health sector in the implementation of SAICM adopted in 2012 at the third session of the Conference.

81. The OECD reported to the secretariat that through its Environmental Performance Reports it offers countries an opportunity to have their chemicals management system evaluated. Recent evaluations have been done in Austria (2013) and Colombia (2014). OECD plans to initiate work on the exchange of information on methodologies for evaluating the performance of chemicals management schemes. Costa Rica reported that the country is in the process of joining OECD and therefore they are at the stage of identifying achievements and gaps in the implementation of actions in the field of chemicals.

82. Furthermore, the SDGs, as a more recent development, are contributing to the increased understanding of the global situation with regards to the sound management of chemicals and waste as outlined in SDG12 on sustainable consumption and production. The SDGs also allow for broader considerations of human health, environment, agriculture, labour and gender.

3. Looking to 2020 and beyond

83. The Working Group, under agenda item 4(a), will consider the need for and arrangements for the development of a SAICM progress report for the period 2017–2019.

84. Enhancing capacity to assess progress in the implementation of the sound management of chemicals and waste beyond 2020 will support strategic decision-making, programming and prioritizing in moving forward. In moving beyond 2020, stakeholders may wish to consider an evaluation framework to track progress on multiple levels with multiple stakeholders, complementing existing efforts. The use of different data sources and methods may help to ensure a more comprehensive review of global progress in the future.

III. Next steps

85. The secretariat will develop a report on progress towards the implementation of the Overall Orientation and Guidance for achieving the 2020 goal of the sound management of chemicals for the consideration of the fifth session of the Conference in 2020 as requested in ICCM Resolution IV/1.

86. Stakeholders are invited to comment on this interim report and advise on further developing it for the consideration of the fifth ICCM session, both in the context of celebrating the achievements of SAICM in 2020 and in setting out baseline information on chemicals and waste in the beyond 2020 context.



**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4(b) of the provisional agenda*

**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Overall orientation and guidance towards the 2020 goal**

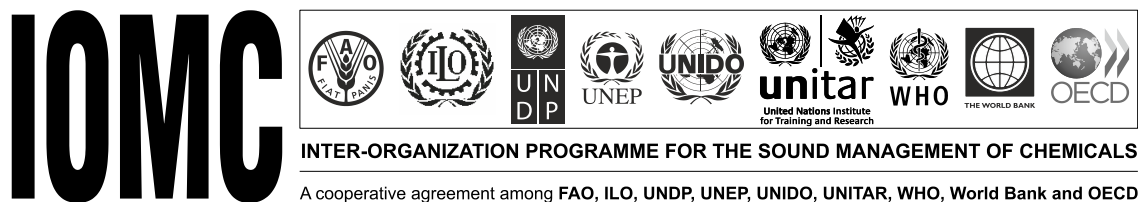
**Activities of the Inter-Organization Programme for the Sound
Management of Chemicals (IOMC) to support Strategic Approach
to International Chemicals Management (SAICM) Implementation**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) on the activities to support the Strategic Approach to International Chemicals Management (SAICM) implementation. The report is presented in the annex as received from the IOMC and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex



Activities of the IOMC to support SAICM Implementation

February 2019

Prepared for the Third meeting of the Open-ended Working Group

Montevideo, Uruguay, 2-4 April 2019

I. Background

1. The Inter-Organization Programme for the Sound Management of Chemicals (IOMC) was established in 1995 to strengthen cooperation and increase coordination among inter-governmental organizations in the field of chemical management. The IOMC currently comprises nine participating organizations: FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, the World Bank, and OECD. The individual IOMC organizations have all endorsed or formally acknowledged support for SAICM, and their activities support the SAICM objectives as well as implementation of the Global Plan of Action, which identifies IOMC organizations as actors for eighty percent of its activities. These activities are formally coordinated by the IOMC, including through its bi-annual meetings. During these meetings, IOMC regularly holds discussions with the Secretariats of the Basel, Rotterdam and Stockholm Conventions, the Secretariat of the Minamata Convention, and the SAICM Secretariat.

II. New IOMC Activities and Resources since ICCM4

Response to the Overall Orientation and Guidance (OOG)

2. In response to the endorsement of the OOG at ICCM-4, the IOMC organizations, as well as the BRS Secretariat, IAEA, and UNECE, completed the implementation tables for the “Overall Orientation and Guidance for Achieving the 2020 Goal” (OOG) which provide detailed information regarding planned actions to implement the OOG and set out action points that will assist in the prioritization of SAICM implementation efforts towards 2020. It is available at <https://www.who.int/iomc/saicm/en/>.

SDGs and Agenda 2030

3. In 2018, the IOMC published a brochure entitled “Chemicals and Waste Management: Essential to achieving the Sustainable Development Goals (SDGs)” which highlights how sound chemicals and waste management are related to achieving all of the SDGs. Printed copies of this document are available during this meeting at the IOMC booth and it can also be accessed, along with an interactive version, at the IOMC website: www.iomc.info.
4. Also available at this meeting as INF document 15 is an updated version of the 2017 report “IOMC plans for future actions to implement the goals and targets of the 2030 Agenda” which focuses on future actions and policies beyond 2020 specifically linked to the SDGs and 2030, provides information from all Participating

Organizations regarding the main policies and actions they have or plan to undertake regarding sound chemicals and waste management in the context of the SDGs, and includes a chart mapping IOMC organizations chemicals and wastes activities against the 17 SDGs.

IOMC indicators of progress in implementing SAICM

5. Since being proposed at ICCM-4, the IOMC has compiled and provided data on eight IOMC indicators of progress in implementing SAICM, which are also being used in the current SAICM report on progress (SAICM/OEWG.3/INF/4) and the Global Chemicals Outlook-2 (GCO-II). For more information: https://www.who.int/iomc/indicators_saicm/en/.

IOMC Toolbox

6. The IOMC internet-based “Toolbox for Decision Making in Chemicals Management” has been updated with a new user interface which is now available and may be tested at the IOMC booth during this meeting. Use of the website by stakeholders is being supported by a series of national and regional training workshops during 2019 and 2020, as well as a series of webinars on the Toolbox including related toolkits and tools. For more information: <https://iomctoolbox.oecd.org/>.

IOMC Mercury Group

7. The participating organizations of the IOMC Mercury Group (ILO, UNDP, UN Environment, UNIDO, UNITAR, WHO, World Bank, and the OECD), as well as the Secretariat of the Minamata Convention and the GEF, continue activities intended to support the ratification and implementation of the Minamata Convention, involving close cooperation and coordination among these organizations. The broad range of activities includes: Minamata Convention Initial Assessments (MIAs), funded by the Global Environment Facility; support for developing National Action Plans on Artisanal and Small-scale Gold Mining (ASGM); and the development of guidance, hosting regional workshops, etc. For more information: <https://www.who.int/iomc/asgm/en/>.

Database of IOMC activities in countries

8. The database of IOMC activities in countries has been updated to provide an overview of where individual IOMC organizations are working on chemicals issues in countries. The entries relate to country-specific activities and not normative or general activities applicable to many countries, such as the development of guidelines. Information from the Secretariat of the Basel, Rotterdam and Stockholm Conventions is also included. The database is searchable by country or by IOMC organization and is available here: <https://www.who.int/iomc/activity/poactivities/en/>.

SAICM emerging issues

9. IOMC Participating Organizations have continued to act as leads for the various Emerging Policy Issues (EPIs) and other issues of concern. Reports on progress and additional information may be found in two related documents available at this meeting: SAICM/OEWG.3/6 and INF/9.

Inter-agency meetings on sound chemicals management

10. The *Inter-Agency Meetings on Sound Chemicals Management* were initiated by the IOMC in May 2016 and in follow-up to the UN EMG report “United Nations and Sound Chemicals Management: Coordinating delivery for member states and sustainable development”. The purpose of the meetings is to provide an opportunity for direct dialogue between interested agencies and organisations and consider collaboration on the way forward towards the 2020 goal and beyond, in the context of the SDGs and the 2030 Agenda for Sustainable Development. Specific items are discussed in particular meetings, as needed. At the first meeting, agencies indicated the usefulness of meeting around one time per year, for purposes of coordination, sharing information, and obtaining feedback on new activities. To date, four Inter-agency meetings have been held in May and October 2016, March 2017, and November 2018. The most recent meeting brought together representatives from 13 agencies and secretariats, including a presentation by the UN Special Rapporteur on Human Rights and Toxics. Specific

discussions were held on: the interface between chemicals and wastes and implications for future work on sound chemicals management; input to and considerations on the SAICM intersessional process for “beyond 2020” and preparations for OEWG-3; and current issues in relation to international chemicals instruments, including the Basel, Rotterdam, Stockholm and Minamata Conventions, UNECE instruments and others, as well as insights from the draft 2nd Global Chemicals Outlook (GCO-II). For more information:

https://www.who.int/iomc/Interagency_meetings/en/

III. Activities of the IOMC Participating Organizations in support of the SAICM Objectives

11. The following section provides summary information on activities since ICCM4 (September 2015), organized by SAICM objectives, received from FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank, and OECD.

Food and Agriculture Organization of the United Nations (FAO)

The key area of FAO relating to chemicals management is the area of pesticide use in crop production, forestry, animal husbandry and food safety and the impacts of these chemicals on human health and the environment. In the context of SAICM, FAO works to provide guidance and technical assistance to countries in complying with international legal obligations such as those defined in the Basel, Rotterdam and Stockholm Conventions, and with best international practices in the regulation, management and use of pesticides in agriculture.

FAO's strategic programme integrates sustainable agricultural production with sustainable diets, conservation of natural resources, improvement of rural livelihoods and access to national and international markets. Pesticide management management in this context focuses on risk reduction through reduced reliance on and sound use of pesticides in agriculture, phasing out highly hazardous pesticides (HHPs) and promotion of non-chemical alternatives and other good agricultural/agroecological practices. With a substantial portfolio of projects that are funded by a diverse range of donors and financing institutions, FAO helps countries to develop capacity for risk reduction and promote sound management of pesticides through their lifecycle. FAO's technical divisions and the extensive network of FAO Regional, Sub-Regional and country offices also provide institutional and technical support.

FAO's work on agrochemicals management and risk reduction is backed by an extensive programme of setting international standards, preparation of technical guidance and development of tools to assist countries. FAO and WHO together recommend Maximum Residue Limits (MRLs) for pesticide residues in food, develop technical specifications for pesticide formulations to ensure product quality, and produce guidelines, training materials and tools to assist countries. The entire FAO pesticide management programme is framed by the International Code of Conduct on Pesticide Management, a voluntary agreement that outlines effective life cycle management of pesticides.

SAICM objective: Risk Reduction

A priority area of activities is reduction of risks from Highly Hazardous Pesticides (HHPs) that pose the greatest risks and cause most serious poisonings worldwide. HHPs are now an Emerging Policy Issue. Pesticide regulators are guided in identifying HHPs under their conditions of use and finding alternative pest management strategies that can replace the use of or reduce the risks from use of HHPs. Countries taking action on HHPs have been guided by the FAO Pesticide Registration Toolkit and specific guidelines developed jointly by FAO and WHO for this purpose (FAO/WHO Guidelines on Highly Hazardous Pesticides published in 2016). FAO is facilitating a fruitful, hands-on collaboration between national and international organizations, academia and civil society with the aim to build capacity and dialogue among countries, and to move from local to global action on HHPs. It has facilitated the elaboration of a number of HHP regional and national strategies especially in the African, Caribbean, Asia and Pacific (ACP) countries. Scaling up addressing HHPs globally will continue with the collaboration of IOMC POs including WHO, UNEP, UNDP, and UNIDO.

Integrated Pest Management (IPM) remains a key pesticide risk reduction strategy and is at the core of FAO's crop production and protection approach. In IPM, farmers are informed about ecological approaches to crop protection such that their reliance upon chemical pesticides is minimized and the selection of pest management tools is compatible with the ecosystem in which they are operating. As part of the activities on Fall Army Worm (FAW), FAO has developed a Guide on IPM of FAW through Farmer Field Schools in Africa (<http://www.fao.org/fall-armyworm/faw-management/pesticide-guidance/en/>). Last, with the 2nd international symposium on agroecology held in 2018, FAO is working to further scale up IPM and agro-ecological approaches, including development and use of non-chemical alternatives and other good agricultural practices.

SAICM objective: Knowledge and Information

Currently more than 40 technical guidelines in support of the International Code of Conduct on Pesticide Management are published and available on-line. Many are translated into UN languages. Recent publications include the Guidelines on HHPs, on pesticide legislation and on the registration of biological pest control agents. All technical standards for pesticide specifications and Maximum Residue Limits are published on-line as they are produced. <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/list-guide-new/en/>

The FAO Pesticide Registration Toolkit (www.fao.org/pesticide-registration-toolkit/tool/home/) launched in 2016 has been helping pesticide registrars in improving their decisions and in accessing relevant information. As of the end of 2018, more than 370 registration staff members in over 60 countries have been trained on the Toolkit.

SAICM objective: Governance

The FAO/WHO International Code of Conduct on Pesticide Management provides a voluntary framework for effective life cycle management of pesticides. Legislation and regulation is the foundation of sound chemical management and this applies to pesticides too. Noting that pesticides are largely governed by Ministries of Agriculture or Health, it is vital to support inter-sectorial approaches to sound chemicals management. FAO, jointly with UNEP, hosts the Secretariat of the Rotterdam Convention which helps governments to control trade in certain hazardous chemicals and pesticides.

SAICM objective: Capacity Building and Technical Cooperation

FAO has been running programmes and technical cooperation projects on capacity building for pesticide management since the 1960s. It has become a unique body with offices and project support staff in every geographical region, and with strong expertise and broad knowledge of pesticide management that is applicable to chemical management in other sectors as well as in agriculture and health. Operational projects in January 2019 span more than 65 countries, and more are in development as others conclude their activities. As one of the implementing agencies of the Global Environment Facility (GEF), FAO is supporting countries in implementing projects to address pesticide management, including POPs pesticides.

Training is offered on an ongoing basis on every aspect of FAO's work on pesticide management - more recently on pesticide registration and on HHPs - and on standard setting (e.g. MRLs), and collaboration with other agencies through IOMC expands opportunities for capacity development. FAO is also supporting a post-graduate Master programme on pesticide management at the University of Cape Town.

SAICM objective: Illegal International Traffic

Illegal trade in pesticides remains a serious, growing threat in the agricultural sector (risk problem with phytotoxicity, production crop losses, human health poisoning, environmental contamination, trade problem etc.), and is directly targeted by Articles 6 and 9 of the International Code of Conduct on Pesticide Management. It is critical to address this problem as it undermines the on-going efforts made to improve registration and to reduce HHPs. FAO works with countries to build capacity in every stage of the pesticide life cycle and will increase its focus on compliance and enforcement aspects. This includes effective inspections and import controls which are the most effective points to prevent illegal imports and trade in chemicals. Similarly, FAO, together with WHO, determine pesticide specifications which allow countries to test the quality of pesticides that are imported and traded in their territory. Effective and quality control measures identify counterfeit and substandard pesticides and allow countries to remove them from the market and prosecute offenders. The Rotterdam Convention secretariat supports parties in reducing risks in particular from pesticides through effective implementation of the Convention. Parties are enabled to take informed decisions on import of hazardous pesticides into their territory.

International Labour Organization (ILO)

The ILO Governing Body endorsed SAICM at its 297th Session (November 2006) and approved the follow-up activities proposed by the Office to implement SAICM objectives. This included active involvement by the ILO in the operations of the SAICM Quick Start Programme Trust Fund Implementation Committee, as well as supporting ILO-related activities in the SAICM's Global Plan of Action. ILO actively participates in Inter-agency meetings and is supportive of the dialogue and information sharing on the way forward towards the 2020 goal and beyond, in the context of the SDGs and the 2030 Agenda for Sustainable Development.

Recognizing that the protection of workers from the harmful effects of chemicals also enhances the protection of the general public and the environment, the ILO (through its Labour Administration, Labour Inspection and Occupational Safety and Health Branch - LABADMIN/OSH), focuses on assisting its 187 member States to implement the main ILO chemicals-related Conventions, namely the Chemicals Convention, 1990 (No. 170) and the Prevention of Major Industrial Accidents Convention, 1993 (No. 174). These two Conventions provide the basis for the sound management of chemicals at the workplace, as recognised by ICCM and SAICM.

Furthermore, implementation by member States of the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) remains a priority, as well as an important SAICM objective. The ILO, in collaboration with UNITAR, will continue to work through the UNITAR/ILO Global GHS Capacity Building Programme, to assist developing countries and countries with economies in transition to implement the GHS.

SAICM objective: Risk Reduction

In collaboration with WHO and the European Commission, ILO has developed a comprehensive database of International Chemical Safety Cards (ICSCs) intended to provide essential safety and health information on chemicals in a clear and concise way. To date, approximately 1700 cards are available and hosted in the ICSC database. The database is available in English, French, Spanish, Finnish, Hungarian, Japanese, Polish, Italian, Chinese and Russian. The ILO is dedicated to chemical risk reduction efforts through the promotion and regular update of the ICSC database.

Under the auspices of IOMC, the ILO assisted in the development of the IOMC toolbox. The Toolkit on occupational safety and health management systems for chemicals has been completed in collaboration with the OECD. The ILO led an IOMC Toolbox training to promote its use in risk reduction. In addition, the ILO will continue to review the existing Occupational Safety and Health Scheme, and will provide technical expertise to national and regional workshops on chemical safety management in the workplace when needed.

The ILO has developed and pilot tested several risk assessment tools for improving health and safety at the workplace, which includes safety in the use of chemicals. The Training package on workplace risk assessment and management for small and medium-sized enterprises (SMEs) and the 5 step guide for employers, workers and their representatives on conducting workplace risk assessments provide practical strategies towards the improvement of health and safety and the management of hazardous risks at the workplace. The ILO promotes these tools through various risk assessment training courses.

The ILO has various projects and initiatives that seek to foster the creation of a global culture of safety and health prevention, with the objective of achieving real reductions in the incidence of work-related death, injury and disease across global supply chains (GSCs). In particular, these projects aim to reduce and prevent OSH risks, including those related to hazardous chemical exposures, for workers in key sectors across GSCs – including agriculture (exposure to pesticides), textile and garment production (exposure to dyes), and manufacturing (exposure to paints, solvents and glues).

SAICM objective: Knowledge and Information

The ILO maintains a website dedicated to the topic of chemicals and the environment at <https://www.ilo.org/safework/areasofwork/chemical-safety-and-the-environment/lang--en/index.htm>. This website is regularly updated with key resources, including instructional material, resources lists, information on normative instruments, and information on relevant upcoming events. It furthermore contains links to information about SAICM and IOMC.

To support national SAICM implementation, the ILO has translated key guidance material prepared by UNITAR such as Guidance for Developing SAICM Implementation Plans, and has provided input into UNITARs document, National Implementation of SAICM: A Guide to Resource, Guidance and Training Materials of IOMC Participating Organizations.

The UNITAR/ILO Global GHS Capacity Building Programme provides guidance documents, and educational, awareness-raising, resource, and training materials regarding the GHS (<http://www.unitar.org/cwm/ghs>).

The ILO, in collaboration with its International Training Centre (ITC-ILO) and the International Commission on Occupational Health (ICOH) provides training on Chemical Safety in the framework of a Master's Program in Occupational Safety and Health.

The ILO, in collaboration with ITC-ILO will host a Knowledge Sharing Meeting on working conditions in Artisanal and Small Scale Gold Mining (ASGM) in the Philippines in May 2019 with the aims of promoting ILO legal standards related to the safe use of chemicals as well as the Minamata Convention.

SAICM objective: Governance

As an indication of support for the outcomes of ICCM, the Governing Body of the ILO endorsed the SAICM at its 297th Session and approved the follow-up activities proposed by the Office to implement the SAICM objectives. ILO actively participates in Inter-agency meetings and is supportive of the dialogue and information sharing on the way forward towards the 2020 goal and beyond, in the context of the SDGs and the 2030 Agenda for Sustainable Development.

The ILO promotes its numerous International labour standards and disseminates its codes of practice and guidelines on this topic. Focus is placed on assisting ILO's 187 member States to implement the main ILO chemicals-related Conventions, namely the Chemicals Convention, 1990 (No. 170) and its recommendation the Prevention of Major Industrial Accidents Convention, 1993 (No. 174). These two Conventions provide the basis for the sound management of chemicals at the workplace, as recognised by ICCM and SAICM. Other pertinent standards include: Asbestos Convention, 1986 (No. 162); Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (No. 148); Radiation Protection Convention, 1960 (No. 115); Benzene Recommendation, 1971 (No. 144); Occupational Cancer Convention, 1974 (No. 139); Labour Inspection (Agriculture) Convention, 1969 (No. 129); Safety and Health in Construction Convention, 1988 (No. 167); Safety and Health in Mines Convention, 1995 (No. 176); and the ILO List of Occupational Diseases, Recommendation (No. 194).

ILO activities have been implemented in line with paragraph 2b) of article 16, Article 7 and Annex C of the Minamata Convention. The ILO has promoted the ratification and implementation of ILO instruments relevant to mercury, including the Convention on Chemicals, 1990 (No.170) and the Convention on Safety and Health in Mines, 1995 (No. 176). This is in addition to the ILO List of Occupational Diseases which includes occupational diseases caused by mercury or its toxic compounds. There are a number of ongoing ILO projects related to mercury use in artisanal and small scale gold mining (ASGM), and also in the automobile dismantling sector. Various ILO projects are actively participating in NAPs to eliminate mercury, and producing guidance and research materials in collaboration with other stakeholders.

The ILO plans to develop new technical guidelines on chemical hazards, and to consolidate a number of chemical instruments including: Convention No.13 on white lead; Convention No.136 and Recommendation No.144 on benzene; Recommendation No.4 on lead poisoning; and Recommendation No.6 on white phosphorous; in the context of Convention No.170 and Recommendation No.177 on chemicals, as to be determined by the International labour Conference (ILC). The ILO will also be taking action for the promotion of the Asbestos Convention, 1986 (No. 162) concerning Safety in the Use of Asbestos and the Prevention of Major Industrial Accidents Convention, 1993 (No. 174).

The 4th ILO Standard Review Mechanism - Tripartite Working Group met in September 2018 and reviewed a number of OSH instruments, including the following two instruments directly relevant to chemical safety: the Safety and Health in Construction Convention, 1988 (No. 167) and its Recommendation No.175, and the Safety and Health in Mines Convention, 1995 (No. 176) and its Recommendation No.183.

SAICM objective: Capacity Building and Technical Cooperation

The ILO has produced a series of technical publications on E-waste to promote capacity building among its constituents and stakeholders to better tackle this issue. In addition the ILO has joined the new UN Coalition to Tackle Electronic Waste and promotes the implementation of its objectives. In April 2019, the ILO will host a high-level Forum to discuss current and emerging issues related to decent work in the management of the E-waste sector.

The ILO has initiated the process of formally joining the Global Alliance to Eliminate Lead Paint, in which it will leverage its unique tripartite structure to promote social dialogue towards the phase out of the manufacture and sale of lead paint.

ILO's Green Jobs programme promotes the "greening" of enterprises, workplace practices and the labour market as a whole. These efforts create decent employment opportunities, enhance resource efficiency and build low-carbon sustainable societies. Green jobs are defined as "decent jobs that contribute to preserve or restore the environment", be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Such jobs help to: improve energy and raw materials efficiency; limit greenhouse gas emissions; minimize waste and pollution; protect and restore ecosystems; and support adaptation to the effects of climate change.

The ILO is currently developing its strategic approach for engaging on a number of global issues of concern including lead in paint, chemicals in products (textile and garment supply chain), highly hazardous pesticides, and nanotechnologies and manufactured nanomaterials.

United Nations Development Programme (UNDP)

Within the framework of SAICM, UNDP advocates for the integration of sound chemicals management priorities into national environmental and poverty reduction planning frameworks. UNDP supports international chemicals conventions objectives and assists Parties to comply with agreed measures. In addition, UNDP helps countries to identify and access technical and financial resources to improve their chemicals and waste regimes. UNDP assists developing countries and countries with economies in transition to implement national and sector strategies that preserve the ozone layer while adopting low carbon emission technologies and safeguarding the global climate; supports partner countries in reducing POPs and mercury releases through the sound management of chemicals and hazardous waste in industry, health, energy and agriculture; and assists countries to develop capacity to access, combine and sequence various sources of environmental finance.

As one of the implementing agencies of the Global Environment Facility (GEF) as of January 2019, UNDP is supporting 37 countries in implementing forty-six projects to address Persistent Organic Pollutants, lead, and mercury with a combined portfolio of projects amounting to US\$ 164 million of grants provided by the GEF and co-financing of US\$ 643 million. UNDP supported activities have [resulted so far in reducing risk of direct exposure to POPs for 2.5 million people and safely disposing of 18,203 tonnes of POPs](#).

UNDP also helps countries to meet their commitments under the Montreal Protocol on Substances that Deplete the Ozone Layer, phase-out HCFCs and introduce Ozone and Climate friendly alternatives with the financial support of the Multilateral Fund for the Implementation of the Montreal Protocol (MLF), the Global Environment Facility (GEF) and bi-lateral donors. Since 1992, UNDP has implemented 2,496 projects in 120 countries. UNDP's portfolio of ozone-related projects has a cumulative total value exceeding US\$ 829.6 million in grant funding and to date has prevented the release of over 70,000 tonnes of ozone depleting substances into the atmosphere.

SAICM objective: Risk Reduction

UNDP activities on chemicals, such as Persistent Organic Pollutants, Ozone Depleting Substances, and Mercury help reducing risks to environment and health.

UNDP supports the sound management, reduction, sound disposal, and elimination of all types of POPs contaminants (POPs pesticides, PCBs, unintentional POPs, etc.) included under the Stockholm Convention.

In the framework of the Montreal Protocol, UNDP helps countries to undertake investment activities in refrigeration, air conditioning, foams and solvents sectors to phase out the production and consumption of ozone-depleting substances thus reducing risks to human health and environment. Such activities also include the validation and demonstration of low carbon alternative technologies with zero ozone-depleting potential.

To protect public health and the global environment from the impacts of heavy metals, such as mercury and lead, UNDP is supporting countries through i) introduction of management schemes that support the waste aspects of obsolete equipment (including mercury waste stream), which arise when more environmentally friendly and energy efficient appliances are being introduced (e.g. as a result of refrigerator replacement programmes); and ii) introduction of Best Environmental Practices (BEP) and Best Available Technologies (BAT) to e-waste processing to avoid harmful releases of heavy metals and other hazardous substances.

SAICM objective: Knowledge and Information

UNDP maintains websites at <http://www.undp.org/chemicals/> and <http://www.undp.org/ozone/> where it provides information on its activities on chemicals management and about linkages between chemicals development and development. UNDP publications on chemicals, waste and ozone-depleting substances are also available through these websites and by following the link at: <http://www.undp.org/content/undp/en/home/library.html?start=0&sort=date&view=cards&tag=topics:sustainable-development/Chemicals-and-waste-management#>

SAICM objective: Governance

UNDP has been supporting the SAICM development process through participation and contributions to preparatory meetings as well as the ICCM. UNDP is a member of the SAICM Quick Start Programme Implementation Committee and the Executive Board. Furthermore, with SAICM adoption, UNDP realigned its

chemicals' programming to enhance its support to countries with SAICM implementation in order to adequately reflect SAICM priorities in its technical assistance strategy.

UNDP supports countries in the implementation of chemicals-related international agreements and Conventions on chemicals such as the Stockholm Convention on Persistent Organic Pollutants, Montreal Protocol on Substances that Deplete the Ozone Layer, and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

SAICM objective: Capacity Building and Technical Cooperation

UNDP's capacity building and mainstreaming approach follows guidance provided by UNDP Guide for Integration of Sound Management of Chemicals into Development Planning Processes which provides an explanation of the synergies that exist between SMC and development goals and suggests steps in determining national SMC capacity building needs/priorities and "points of entry" to facilitate the integration of SMC into national development plans and sector-based strategies.

Within its programmes under the implementation of the Stockholm Convention and the Montreal Protocol, UNDP endeavors to incorporate issues related to POPs and ODS management into national development planning processes, and its projects aim to improve policy and regulatory frameworks through targeted institutional capacity development.

Within the framework of Montreal Protocol and funded by the MLF, UNDP supports 22 countries with institutional strengthening projects, with focus on national ozone units.

SAICM objective: Illegal International Traffic

Within the framework of institutional strengthening projects funded by MLF, UNDP assists national ozone units to establish licensing systems for import and export of ozone-depleting substances (ODS) and undertake trainings for customs officials to prevent illegal trade in ODS.

UN Environment Programme (UNEP)

UN Environment is the authority on the environment and is mandated to keep the environment under review. Chemicals and waste are part of the environment and their sound management is a core mandate of UNEP. As such, UNEP activities contribute to the SAICM goal of sound management of chemicals and waste to protect human health and the environment from the harmful effects of chemicals and waste and catalyzes the links among chemicals and waste agenda with others such as the sustainable consumption and production agenda, circular economy, biodiversity, sustainable approaches and innovation. In addition, UN Environment hosts the SAICM secretariat and is providing support to the SAICM secretariat during intersessional meetings and sessions of the International Conference of Chemicals Management. The following paragraphs provide some examples of relevant UN Environment activities since ICCM4 that contribute to the SAICM objectives.

SAICM objective: Risk Reduction

Global Environment Facility (GEF) funded projects: UNEP has been working on projects that reduce risk from the harmful effects of hazardous chemicals and waste in countries with support from the GEF. These GEF projects include a) Elimination of lead in paint with support on the development of laws and work with the paint industry to comply with the law b) Inventory and elimination of PCB containing equipment c) Destruction of DDT obsolete stocks d) Management of mercury risks e) Management of chemicals in the textile industry f) Management of electronic waste g) Reduction of mercury use and emissions from the artisanal and small-scale gold mining sector h) Chemicals in products using life cycle thinking and approaches, as well as eco-innovation methodology and tools such as sustainable public and private procurement, to manage risks and reduce impacts in three value chains: buildings, electronics and toys. Key chemicals of concern are identified in these three sectors, and life cycle tools applied to get a better understanding of toxicity and other impacts from potential alternatives to harmful chemicals, using and improving USEtox (the UNEP-SETAC Life Cycle Initiative toxicity model).

Eco-innovation: By implementing its Eco-innovation approach, UNEP supports companies in developing a new business model which promotes sustainability throughout the entire life cycle of a product, while also boosting a company's performance and competitiveness. It also supports countries in reviewing government policies to enable circularity and eco-innovation approaches, contributing to the innovative solutions, and enhancing the competitiveness of small and medium enterprises (SMEs), while at the same time contributing to SDG targets. In Jordan (2017-2018), through a project funded by **SAICM Quick Start Programme**, in partnership with the Royal Scientific Society, Jordan, UNEP supported finding alternatives for the replacement of identified hazardous chemicals in SMEs of the paint, fertilizers, drilling, and detergent sectors. The project helped reduce health risks for employees and consumers, and the environmental impacts associated with the handling and use of hazardous chemicals. These sustainability benefits are gained while supporting companies in identifying new market opportunities for their newly developed products, ensuring their competitiveness in the local and international markets, and complying with national and international regulations on the sound management of chemicals.

SAICM objective: Knowledge and Information

The Global Chemicals Outlook II (GCO II): The GCO-II is a key publication orchestrated by UNEP and seeks to alert policy-makers and other stakeholders to the critical role of the sound management of chemicals and waste in the context of sustainable development. The GCO-II features 10 key findings and 10 areas for action, identified based on the analysis in the five Parts. Part I: The evolving chemicals economy: status and trends relevant for sustainability; Part II: Where do we stand in achieving the 2020 goal – assessing overall progress and gaps; Part III: Advancing and sharing chemicals management tools and approaches; Part IV: Enabling policies and action to support innovative solutions; Part V: Scaling up collaborative action under the 2030 Agenda for Sustainable Development. GCO-II Documentations include a) Summary for Policymakers (UNEA-4 Working Document; being translated in all UN languages) b) Synthesis Report (to be launched at UNEA-4) c) Full GCO-II (to be available to the OEWG) c) 16 foundational papers (to be made available on the web).

An “**Integrated Stockholm Convention toolkit to improve the transmission of information under Articles 07 and 15 of the Stockholm Convention**” is a GEF funded project that aims to facilitate the development, transmission, access and use of data contained in national implementation plans and national report; , including through the development of an electronic template for the reporting of quantitative information contained in national implementation plans in a manner harmonized with the reporting under Article 15 of the Convention.

With the support of the GEF, UNEP is supporting **62 countries in their Minamata Initial Assessment (MIA)** work where the UNEP mercury toolkit is used to provide an overview of the mercury emissions nationally and established priorities for action. In addition, **24 countries** are supported by UNEP in the development of their **National Action Plan (NAP) for the Artisanal and Small-Scale Gold Mining sector**. UNEP supported the countries by developing a methodology for initial assessment of the use of mercury in the sector and is supporting the collection of information with a geographic representation tool, MAP-X.

The Chemicals and Health Branch contributed to the **Pollution and Health** report that provided evidence of chemicals and waste as pollutants and key policy recommendations.

Platform for SMC in SMEs. In collaboration with UNITAR, UNEP developed the Sound Management of Chemicals (SMC) in Small and Medium Sized Enterprises (SMEs) - Platform of tools and methodologies for SMC implementation (<http://smctools-sme.unitar.org/>). The Platform is an online system resulting from the feedback of an expert group formed by RECPnet members, SAICM representatives, ICCA, and UNIDO. The Platform has tools and methodologies to assist service providers working with SMEs in developing countries, to achieve the sound management of chemicals.

Assessing toxicity impacts along the life cycle of chemicals. The Life Cycle Initiative (<https://www.lifecycleinitiative.org/>, hosted by UNEP) fosters the development of the USEtox scientific consensus model (www.usetox.org) for the assessment of human and eco-toxicity in the context of Life Cycle Assessment. This model continues to be developed to enhance the assessment of alternatives to chemicals of concern with a holistic life cycle perspective, including all types of environmental impacts.

To advance work on **endocrine-disrupting chemicals**, UNEP organized two meetings back-to-back with the meetings of the conferences of the Parties to the Basel, Rotterdam and Stockholm conventions. They included a consultative meeting on endocrine-disrupting chemicals, held on 20 and 21 April 2017, followed by the fourth meeting of the UNEP Advisory Group on Endocrine-Disrupting Chemicals, held on 21 April 2017. Three reports have been launched, to share recent advances in science. (i) Worldwide initiatives to identify endocrine-disrupting chemicals and potential endocrine-disrupting chemicals; (ii) Review of existing national, regional and global regulatory frameworks that address endocrine-disrupting chemicals; (iii) Overview of the current knowledge on chemicals identified as endocrine-disrupting chemicals and selected potential endocrine-disrupting chemicals. The reports are posted on the UNEP website.

The International Environmental Technology Centre provided knowledge and technical support for development of **national- and municipal-level waste policies, strategies and action plans**. In partnership with Global Partnership on Waste Management, the Centre completed three assessments in 2017: (i) Global Mercury Waste assessment, (ii) Waste management in ASEAN Countries, (iii) Regional study on mercury waste management in the ASEAN countries. The Global Waste Management Outlook provided targeted regional and thematic reports. A thematic outlook for mountain region was published in December 2016. Regional waste management outlooks for Asia, Central Asia, and Latin America and the Caribbean were published in September 2017. Waste management outlook for Africa was published in Jun 2018 during the World Environment Day. An update to the Global Waste Management Outlook, published in 2015, is being planned for publication in 2019. The Centre also promoted 3R approach for waste management through development of waste management strategies and action plans at national and city levels.

SAICM objective: Governance

UNEP is supporting countries with establishing policies to adequately manage chemicals and wastes by establishing standard for total lead in paint, undertaking legislative reviews for the implementation of the Minamata Convention, establishment of Extended Producer Responsibility schemes for the management of end of life of electronic products. Under the GEF GOLD programme, UNEP will support countries in their formalization efforts of the sector.

The High Ambition Alliance on Chemicals and Waste was established in July 2018 with the aim to promote and ensure commitment to an ambitious new global deal to the sound management of chemicals and waste for beyond 2020. It is co-chaired by the Minister for the Environment, Sweden, and Minister for Housing, Land Planning and Environment, Uruguay. It is formed to raise the political profile of the benefits of tackling hazardous chemicals and waste and make it a more ambitious programme than it currently is. Furthermore, the Alliance recognizes the vast costs of inaction that, unchecked, will have direct impact on human health, the

environment and economic development. UNEP is part of the Alliance.

SAICM objective: Capacity Building and Technical Cooperation

The Special Programme to support institutional strengthening at the national level for the implementation of the Basel, Rotterdam and Stockholm Conventions, Minamata Convention and the Strategic Approach to International Chemicals Management (Special Programme): Established in September 2015, the Special Programme supports country-driven institutional strengthening at the national level, in the context of the integrated approach to address the financing of the sound management of chemicals and wastes, taking into account the national development strategies, plans and priorities of each country, to increase sustainable public institutional capacity for the sound management of chemicals and wastes throughout their life cycle. The Special Programme is one of two complementary elements of dedicated external financing under the integrated approach, with the GEF being the further element. Currently, there are forty-two (42) projects have been approved by the Executive Board in three rounds of applications amounting to approximately US\$ 11.5 million, selected on the basis of the project's merits, regional balance and priority to countries with least capacity, taking into account the special needs of least developed countries and small islands developing States.

The project **Chemicals and Waste in the 2030 Agenda – Building capacity in SDG follow-up and review in developing countries to minimize chemicals and waste risks across sectors**, funded by UN Development Account aims to enhance capacities in developing countries to collect data, monitor trends and identify related needs and action in support of evidence-based national decision-making and reporting under relevant international chemicals and waste agreements and the SDG global indicator framework. A global review of reporting requirements on chemicals and wastes, including reviewing the current status of MEAs and SAICM reporting, related gaps and identifying methodological issues, has been conducted.

UNEP in collaboration with the BRS secretariat is partnering with the private sector for pilot demonstration projects on **the environmentally sound management of waste lead acid batteries**.

To support Stockholm Convention Parties comply with the obligation arising from Article 7 of the Convention, UNEP executed two GEF projects entitled **“Global project on the updating of National Implementation Plans for POPs”** and **„Global project on the updating of National Implementation Plans for POPs – add on to umbrella FSP project“**. These projects are assisting 34 countries from all UN regions to update and/or develop their national implementation plans (NIPs) and included a regional/global support component to provide technical expertise and tools to facilitate the updating of the NIPs and information exchange. One of the most important outcome of the projects global/regional component was the development of the document **“From NIPs to implementation: Lessons learned report”** reflecting experiences, good practices and lessons learned that will help the global community shape the future activities for Stockholm Convention effective implementation. Another major outcome of the projects global/regional component was compiling the available POPs quantitative data within the NIPs and the national reports and visualizing it on interactive maps created under MapX, as a support to the policy and decision-making processes.

Four GEF funded projects are being implemented in 42 countries in Africa, Asia, the Pacific Islands and in Latin America to strengthen the capacity for implementation of the **Persistent Organic Pollutants (POPs) Global Monitoring Plan of the Stockholm Convention** and to create the conditions for sustainable monitoring of POPs. These projects entitled **“Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention”** aim at measuring the levels of POPs in air, water, human milk, matrices of national interests and enabling the generation of quality and comparable data in human and environmental concentrations of POPs for the effectiveness evaluation. The projects also contribute to capacity-building through conducting interlaboratory data comparison tests; providing training and guidance for sampling and analysis; strengthening capacity in existing laboratories to analyze core media; and assistance to establish long term programs as well as networking. In addition, the projects also aim to create the conditions for sustainable monitoring of POPs in the participating countries in the future. The outcomes will contribute to enhance the knowledge on potential exposure to POPs and the trends.

A project on the **global monitoring of mercury** has also recently been completed and resulted in a global inter-laboratory assessment as well as the development of standard operating procedures for the media to be monitored under the Minamata Convention.

The “**Analysis of Stakeholder Submissions on Sustainable Chemistry**” report contains a snapshot of initiatives and actions by stakeholders referring to sustainable chemistry, revealing its wide use; an analysis of submissions made by stakeholders, finding that stakeholder perceptions illustrate that sustainable chemistry plays a key role in achieving target 12.4 as well as other SDGs and targets not directly linked to chemicals and waste; and an analysis of findings from a survey undertaken by UN Environment to elicit feedback on the sustainable chemistry concept, revealing a holistic understanding of the concept. The report concludes that sustainable chemistry is seen by stakeholders as an important component to achieve the sound management of chemicals and waste and is therefore relevant for the discussions on chemicals and waste management beyond 2020. A practical starting point could be to develop a better understanding of sustainable chemistry opportunities globally.

Eco-innovation and Responsible Production trainings and implementation are supported by the UNIDO-UNEP **Resource efficiency and cleaner Production network (RECP Net)**. The capacity of the network of partners in more than 60 countries, is being built through trainings and joint implementation using the following tools: Eco-innovation manual, the Responsible Production handbook for building the capacity of companies to improve their management of chemical hazards.

Integrated Health and Environment Observatories and Legal and Institutional Strengthening for the Sound Management of Chemicals in Africa (African ChemObs).: This GEF funded project is part of the implementation of the Libreville Declaration on Health and Environment in Africa. It provides a prototype of national integrated health and environment chemicals observatory, including a core set of indicators that will enable data aggregation at national, regional and global levels, to provide timely and evidence-based information to better predict, prevent and reduce chemicals risks to human health and the environment. The project, that entered into its full phase in 2018 to be rolled out until 2022, plans for the development of an integrated health and environment Observatory (ChemObs) for sound management of chemicals in nine African countries (Ethiopia, Gabon, Kenya, Madagascar, Mali, Senegal, Tanzania, Zambia, Zimbabwe) by 2022.

Guidev guidance documents to support countries to establish or improve their legal framework for chemicals control and its enforcement

As a follow up to the LIRA guidance and to further support countries in taking actions in strengthening national legislation and institutional structures in establishing chemicals control, UNEP in collaboration with the Swedish Government will launch at the SAICM OEWG four complementary documents to the LIRA guidance. They are primarily intended for government officials working to implement the safe management of chemicals. The four draft documents are: a) An information document to provide to the reader with information about the role of chemicals control in the life cycle of chemicals and to provide the arguments for taking actions to establish chemicals control legislation with defined responsibilities; and b) Three guidance documents, namely:

- i) National Authority for Chemicals Control: Guidance on the institutional capacity and structure and its funding
- ii) Risk reduction elements in Chemicals Control: Guidance on tools and on data that can be used
- iii) Enforcement of Chemicals Control Legislation: Description of inspection methodology linked to chemicals control.

United Nations Industrial Development Organization (UNIDO)

The UNIDO work, support and interventions on chemicals and waste should be seen in the overall context of advancing the Circular Economy. Much of the thrust is on resource efficiency and developing recycling industries at country level.

The UNIDO contribution to Chemicals and Waste Management is guided by Inclusive and Sustainable Industrial Development (ISID) approaches and is in line with key Sustainable Development Goals, particularly SDG 9 on Industry, Innovation and Infrastructure; SDG 8 on Decent Work and Economic Growth, as well as SDGs 11 and 12 on Sustainable Cities and Communities and responsible Consumption and Production, respectively. Developments of recycling industries stand at an important nexus for fulfilling these SDGs.

UNIDO is implementing a number of programmes that promote clean technologies and/or the preventive approach: the Resource Efficient and Cleaner Production (RECP) Programme, the Montreal Protocol Programme, the Transfer of Environmentally Sound Technologies (TEST) approach, Chemical Leasing, Corporate Social Responsibility (CSR) based on the implementation of a Triple-Bottom Line (TBL) approach, Environmental Management Systems (EMS), the elimination of Persistent Organic Pollutants (POPs), better management of Mercury, sector-specific programmes for the reduction of process wastes and pollution.

The Global RECP Programme, through the application of the RECP methodology, contributes to building capacity and implementing sound management practices at company level.

The Resource Efficient and Cleaner Production Programme strategy focuses on four thematic priorities, one of which is Cleaner Production and environmental sound management of hazardous substances and waste, including chemical leasing, chemicals safety and risk assessment. Within this priority area a new global programme for innovative approaches to environmentally sound management of chemicals and chemicals waste is being promoted.

UNIDO's Stockholm Convention Program, largely funded by the Global Environment Facility, is actively reducing risks, increasing the capacity as well as developing chemicals governance in around 35 countries across all regions. The volume of this technical assistance delivery is nearly US \$ 20 million per year.

Similar support is implemented on Minamata Convention on Mercury. UNIDO is also implementing many projects in the area of reducing mercury risks from artisanal gold mining, including in Burkina Faso, Colombia, Ecuador, Mali, Peru, the Philippines and Senegal.

In addition, UNIDO enjoys a high reputation in assisting countries in eliminating Ozone Depleting Substances under the Montreal Protocol.

United Nations Institute for Training and Research (UNITAR)

UNITAR's Chemicals and Waste Management Programme supports capacity building in developing and transition countries in a wide range of chemicals and waste related areas to protect human health and the environment, often in collaboration with other IOMC POs and key partners. This support includes: (i) infrastructure and capacity assessments (e.g. National Profiles, Global Harmonized System of Classification and Labelling of Chemicals (GHS) situation analyses); (ii) implementation of Multilateral Environmental Agreements, such as the development of enabling activities and socio-economic studies on POPs and mercury, and training and capacity building on waste management including PCBs and e-waste; (iii) specialized training and capacity building (e.g. GHS, pollutant release and transfer registers (PRTRs), nanotechnology and manufactured nanomaterials); and (iv) international chemicals management and the Beyond 2020 process, for example, organization of workshops on goals and targets for chemicals and waste management and international governance.

SAICM objective: Risk Reduction

UNITAR supports more than 30 developing and transition countries to prepare their Mercury Initial Assessments (MIAs) and the National Action Plans (NAPs) on Artisanal Small Scale Gold Mining (ASGM). As part of the MIAs, UNITAR provides training on the development of mercury emissions inventories using UNEP's Toolkit for Identification and Quantification of Mercury Releases. UNITAR is also leading the updating of the Toolkit.

UNITAR also supports countries in implementing the GHS (addressing GHS situation and gap analyses, GHS implementation strategies, GHS legislation, and training and awareness-raising for all stakeholders), which contributes to minimizing risks to human health and the environment through improved hazard communication. From ICCM4 to date, UNITAR has assisted seven countries to implement the GHS system.

UNITAR provides technical support and training for GEF-funded projects to promote BAT/BEP to reduce unintentionally produced POPs from open burning of waste in the SADC region and the Gambia.

SAICM objective: Knowledge and Information

The National Profile Homepage (www.unitar.org/cwm/nphomepage) provides a global collection of National Profiles, including those prepared/updated within the SAICM framework.

The UNITAR/ILO Global GHS Capacity Building Programme provides guidance and training material on the GHS (<https://www.unitar.org/cwm/ghs>), including an e-learning course.

UNITAR provides support to countries to design PRTRs at the national and regional levels. PRTRs provide information on pollution to governments, communities, and the public, thereby supporting the "right to know" principle. UNITAR provides technical assistance, guidance and reference materials, and support for country-based activities, including development of POPs release inventories. In addition, UNITAR's PRTR:Learn (<http://prtr.unitar.org>) provides an interactive platform for sharing insights, information, knowledge, training modules, and resources on PRTRs.

In collaboration with UNEP, UNITAR has also developed the Mercury Platform (<http://mercury.unitar.org>), which shares insights, information, knowledge, and resources on mercury management. The Platform includes Mercury:Learn, which provides online training modules on developing mercury releases inventories, based on UNEP's Toolkit.

With Swiss support and in close cooperation with the Minamata and BRS Secretariats, UNITAR launched the Chemicals and Waste Platform in 2018, to share lessons learned and learning modules that will assist national mercury management teams to better understand the sound management of chemicals and how existing information and materials can be used to support implementation of the Minamata Convention (<https://unitar.org/cwm/chemicals-and-waste-platform>).

SAICM objective: Governance

Over the past 12 years, UNITAR has developed and tested a wide range of guidance materials, in collaboration with a diverse range of countries, IOMC POs, and other partners. These address many of the QSP strategic

priorities to support enabling activities at the national level (outlined in ICCM Resolution 1/4).

UNITAR, in coordination with the IOMC, participates in SAICM Beyond 2020 meetings and numerous regional SAICM workshops. In 2016, UNITAR, in close cooperation with UN Environment, organized a workshop on Chemicals and Waste and the SDGs. In 2018, in cooperation with UN Environment, UNITAR organized a lessons learned workshop on the Biodiversity Aichi targets, which provided some suggestions and good practices to be considered during the Beyond 2020 process. Similarly, in February 2019, UNITAR in cooperation with UN Environment and with German and Swiss support, will organize a workshop to discuss options for institutional arrangements and overall governance of the new framework for the sound management of chemicals and waste beyond 2020. This workshop will provide suggestions to be considered by the Open-Ended Working Group at its third meeting in April 2019.

UNITAR also supports countries to implement international chemicals and waste related agreements through QSP projects as well as by serving as an international executing agency for GEF-funded projects on Stockholm and Minamata Conventions implementation.

SAICM objective: Capacity Building and Technical Cooperation

UNITAR has served as the international executing agency for more than 70 projects supported by the QSP Trust Fund.

UNITAR also embarked with partners such as OECD, and within the framework of the IOMC, to raise awareness about nanotechnology and manufactured nanomaterials, including the implications for developing and transition countries as nano-based or nano-containing products are traded across borders. Activities commenced with a series of regional awareness-raising workshops for all developing and transition countries between 2009 and 2011. In 2011-2012, UNITAR, with the support of the Government of Switzerland, supported three pilot projects to assist developing and transition countries to develop programmatic capacities to address nanosafety issues at the national level. Additionally, from 2015 to 2018, UNITAR organized sub-regional workshops on nanotechnologies and manufactured nanomaterials. Three additional national pilot projects were fully implemented in 2018, also with financial support from the Government of Switzerland.

UNITAR, in close collaboration with UN Environment, also recently developed key publications to support the development and implementation of NAPs on ASGM under the Minamata Convention: (i) The Handbook for Developing National ASGM Formalization Strategies within National Action Plans (<http://mercury.unitar.org/site/document/1438>); and (ii) the Mobile data collection tool for national ASGM overview (<http://mercury.unitar.org/site/document/1401>). In 2018, UNITAR also developed the Socio-Economic ASGM Research Methodology (https://www.unitar.org/sites/default/files/uploads/cwm/final_socio-economic_methodology.pdf).

SAICM objective: Illegal International Traffic

UNITAR has begun an EU-funded project, in close cooperation with UN University and other key partners, to reinforce operational activities and capacities of authorities involved in the fight against illegal trade and management of waste. This will be achieved through the development of practical tools and methodologies and implementation of capacity building activities for enforcement officers to prevent illegal traffic in Europe and Asia-Pacific.

World Health Organization (WHO)

The following paragraphs provide some examples of relevant WHO activities since ICCM4. Readers are also referred to OEWG3 documents on the SAICM emerging policy issues, and the Information Document submitted by WHO on the Chemicals Road Map and Global Chemicals and Health Network.

SAICM objectives: Risk Reduction and Knowledge and Information

Examples of guidance materials, chemical risk assessments and risk assessment methodologies published by WHO since ICCM4 follow.

2018 Data addendum for 2016, Public health impact of chemicals: knowns and unknowns

<https://www.who.int/ipcs/publications/chemicals-public-health-impact/en/>

Chemical releases caused by natural hazard events and disasters: information for public authorities was published along with brochures on Chemical releases caused by earthquakes, Chemical releases caused by floods, and Chemical releases caused by cyclones. <https://www.who.int/ipcs/publications/natech/en/>

Generic risk assessment models for vector control products,

https://www.who.int/neglected_diseases/resources/WHOPES/en/

Use of malathion for vector control. http://apps.who.int/iris/bitstream/10665/207475/1/9789241510578_eng.pdf

Recycling used lead-acid batteries: health considerations, along with brief information for the health sector

<http://www.who.int/ipcs/publications/ulab/en/>

Each year WHO updates its materials on lead paint and lead poisoning for the International Lead Poisoning Prevention Week. WHO and partners also publish a report on lead week.

https://www.who.int/ipcs/lead_campaign/en/

Documents on ASGM and health and Step-by-step guidance on phasing out mercury thermometers and sphygmomanometers were translated into French and Spanish.

http://www.who.int/ipcs/assessment/public_health/mercury/en/

WHO work on the International Chemical Safety Cards (ICSCs) continues to be a major point of collaboration with the International Labour Organization (ILO). ICSCs are available for approximately 1700 chemicals in multiple languages, disseminated via a web-based interface (<https://www.ilo.org/dyn/icsc/showcard.listCards3>). GHS classifications continue to be made for new and updated ICSCs. The corresponding hazard statements, signal words and symbols are included on the ICSCs. To date, GHS classifications have been included on 633 ICSCs.

WHO commissioned a State-of-the-Science Review of Mercury Biomarkers in Human Populations Worldwide between 2000 and 2018, which was published in the scientific literature and formed the basis for a chapter in UNEP's Global Mercury Outlook. <https://ehp.niehs.nih.gov/doi/full/10.1289/EHP3904>

Recent evaluations of the FAO/WHO Joint Expert Committee on Food Additives

<http://www.who.int/foodsafety/chem/jecfa/publications/en/index.html>

Recent evaluations of the FAO/WHO Joint Meeting on Pesticide Residues are available at

<http://www.who.int/foodsafety/chem/jmpr/publications/en/index.html>

Recent evaluations of the International Agency for Research on Cancer (IARC) can be accessed at:

<http://monographs.iarc.fr/>

WHO continues to update guidelines in chemicals in drinking water and air quality guidelines.

SAICM objective: Governance

The World Health Assembly (2017) approved the Road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond.

<http://www.who.int/ipcs/saicm/roadmap/en/>

WHO held Sessions on the WHO Chemicals Road Map at SAICM Regional Meetings, January – February 2018. Report: <https://apps.who.int/iris/bitstream/handle/10665/279903/WHO-CED-PHE-EPE-18.07-eng.pdf>

Global Health Observatory information on the status of regulations and controls on lead paint is regularly updated. http://www.who.int/gho/phe/chemical_safety/lead_paint_regulations/en/

WHO submitted report to Minamata COP1 and 2 on cooperation with WHO

http://www.mercuryconvention.org/Portals/11/documents/meetings/COP2/English/2_12_e_WHO-ILO.pdf

SAICM objective: Capacity Building and Technical Cooperation

A Chemicals Road Map Workbook was produced to support countries and other stakeholders to prioritize and plan implementation of road map activities

<https://apps.who.int/iris/bitstream/handle/10665/273136/9789241513630-eng.pdf?ua=1>

As at the end of 2018 there were 85 institutions in the WHO Chemical Risk Assessment Network from 49 countries. <http://www.who.int/ipcs/network/en/>

A Strategic Plan for enhancing chemical risk assessment capacity 2018-2020 was published and a number of activities implemented. https://www.who.int/ipcs/network/Network_Capacity_Building_Strategy.pdf

Numerous capacity building events have been held. Two recent examples are an International Training Course on Environmental and Health Risk Assessment and Management of Toxic Chemicals, 7–18 December 2018, Bangkok, Thailand, and a National Training workshop to Enhance the Health Sector Role in the Management of Chemicals, 17-19 December 2018, Cairo, Egypt.

A series of regional workshops for ministries of health were held to support health implementation of the Minamata Convention on Mercury, and the outcomes published.

https://www.who.int/ipcs/assessment/public_health/publication/en/

WHO continued to support Member States in prevention, preparedness, surveillance and response to (suspected) chemical incidents.

A workshop on identification of emerging risks to health from chemicals is scheduled for 20-21 February, to develop collaborative activities on this issue under the WHO Chemical Risk Assessment Network.

WHO participated in the execution of a number of QSP and GEF projects, for example on poisons centres, ASGM, and health care waste management.

World Bank

The World Bank has a large project portfolio related to pollution management and environmental health that covers a number of activities with linkages to the SAICM, including POPs, pesticides management, and hazardous waste. In addition, the World Bank Group has a strong portfolio of active projects, with chemicals and waste management components, that is also of direct relevance.

Over the past 12 years, FY04–17, the World Bank Group approved 534 pollution- relevant activities, accounting for approximately US\$43 billion in commitments. These projects have contributed significantly resulting in easing contamination on land and in rivers and air pollution reductions in numerous countries including Argentina, Bangladesh, China, Egypt, Ethiopia, India, Lebanon, Morocco, Mexico, Mongolia, Peru, and Vietnam.

Over the last several years, stakeholders across low and middle-income countries have expressed an urgent need for increased support on pollution management in order to respond to the magnitude of the threat to human health and economies. Responding to pollution is a challenge that is solvable in the near term to save lives and unlock economic opportunity through action at the local, national, regional and global levels.

Some specific World Bank activities related to the objectives of the Strategic Approach are highlighted in the table here below.

SAICM objective: Risk Reduction
The World Bank Group has been active in public and private sector pollution management for several decades. Between 2004 and 2017, the World Bank Group implemented 534 projects, with a total commitment of US\$ 43 billion, that directly targeted pollution management. Projects have improved the management of solid and hazardous waste and wastewater and helped control pollution related to transport, industry, energy, mining, and other sectors across many countries. For example, in Zambia, a Bank loan is assisting the Government to reduce environmental health risks to the local population in critically polluted mining areas in Chingola, Kabwe, Kitwe, and Mufulira municipalities, including lead exposure in Kabwe municipality. In Morocco, the World Bank has supported the modernization of waste management, including at sites like Oum Azza, near Rabat, where traditional trash-pickers now operate a recycling collective in improved conditions. In Africa, a \$25 million program has removed over 3,000 tons of obsolete and dangerous pesticides from close to 900 contaminated sites in Ethiopia, Mali, Tanzania, Tunisia, and South Africa. As an Implementing Agency of the Global Environment Facility, the Bank relies on its comparative advantage for investments to bring about on-the-ground risk reduction. The World Bank's POPs portfolio addresses the closure of production of toxic chemicals, identification and promotion of alternative technologies and practices, investments in Best Available Techniques/Best Environmental Practices, and environmentally sound destruction of toxic stockpiles and wastes. Moreover, sound chemicals management can be achieved through World Bank projects as a byproduct of a project's primary objectives. Though not quantified, these opportunities constitute a strong potential for synergies and mainstreaming chemicals management in Bank operations that can be explored and expanded based on client country priorities.
SAICM objective: Knowledge and Information
The World Bank Group keeps a wealth of information available to the general public through its websites. The Bank's websites on Pollution Management and Environmental Health, on Getting to Green - A Sourcebook of Pollution Management Policy Tools for Growth and Competitiveness; and on Reducing Pollution include information about its strategy, portfolio, and pipeline on hazardous waste management. In addition, the Environmental Health and Safety Guidelines available on the website of the International Finance Corporation, include industry sector-specific guidelines. Other products generated by the World Bank are available in hard and soft copies for all interested stakeholders.
SAICM objective: Governance
As an Implementing Agency of the Global Environment Facility and of the Multilateral Fund for the Implementation of the Montreal Protocol, the World Bank works with developing countries and countries with economies in transition to carry out the investments and build capacities for meeting their obligations under international environmental treaties.

Moreover, the Bank's Environmental and Social Framework (ESF) includes environmental and social standards include requirements on environmental assessment used to examine environmental risks and benefits associated with all Bank investments. The ESF requires that not only national legislation is taken into account but also a country's obligations under relevant international environmental treaties and agreements, including for example the Basel, Rotterdam, Stockholm, and Minamata Conventions and the Montreal Protocol.

SAICM objective: Capacity Building and Technical Cooperation

The World Bank Group views capacity building and technical assistance as an integral part of its work that is integrated into risk reduction investments highlighted above. Capacity building is, in fact, an indispensable element of project interventions in all international development fields. In the Chemicals-related field, all Bank-implemented projects seek to build capacity to ensure that regulation and enforcement capabilities are in place and to ensure the long-term sustainability of efforts. As an example, In Belarus, the Bank worked with the Ministry of Natural Resources and Environmental Protection to develop its capacity to treat and dispose of hazardous waste. The Bank supported a massive cleanup operation at the Slonim burial site, which excavated and disposed of up to 1,750 tons of toxic obsolete pesticides.

Of direct relevance to the SAICM, the Bank promotes approaches where client countries can build the foundations for long-term capacity for chemicals management while working to implement the Stockholm Convention on Persistent Organic Pollutants.

SAICM objective: Illegal International Traffic

The bulk of activities carried out by the Bank in this context relate to the control of illegal trade of Ozone Depleting Substances in the context of the Montreal Protocol. The Bank has also initiated work more recently on international trafficking of wildlife with the creation of the International Consortium to Combat Wildlife Crime in collaboration with CITES and others and has a growing series of investments with client countries on customs modernization and trade. The World Bank Group's Environment and International Law Unit provides advisory support and expertise on environmental compliance and enforcement issues.

Organization for Economic Cooperation and Development (OECD)

In order to facilitate its global reach, the OECD aligns its work closely with other international efforts especially the IOMC. Its 2017-2020 four-year work programme for the overall Chemicals Programme in OECD was organised around the objectives of SAICM: www.oecd.org/chemicalsafety.

SAICM objective: Risk Reduction

OECD has continued to populate its Substitution and Alternatives Assessment Toolbox (see <http://www.oecd-satoolbox.org/>) especially with a library of case studies. A comparative study of activities on substitution and alternative assessment in a number of countries will be released in 2019 (see <http://www.oecd.org/chemicalsafety/testing/substitution-of-hazardous-chemicals.htm>).

On sustainable chemistry, the OECD released a report on the economic features of chemicals leasing, which received a silver award at the 2018 Global Chemical Leasing Awards (see <http://www.oecd.org/env/ehs/risk-management/sustainablechemistry.htm>).

The OECD/UNEP Global Perfluorinated Chemicals (PFC) Group has focused on organizing a series of webinars to raise awareness of risk reduction measures in countries as well as on the availability of alternatives to per and polyfluorinated alkyl substances (PFAS). The group also released an updated list of PFAS in 2018 (see <http://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/>).

SAICM objective: Knowledge and Information

The OECD continually updates and improves its QSAR Toolbox, a free software application intended to be used by member countries, the chemical industry and other stakeholders in filling gaps in (eco)toxicity data needed for assessing the hazards of chemicals. The latest version (4.2) was released in 2018 (<http://www.oecd.org/chemicalsafety/risk-assessment/oecd-qsar-toolbox.htm>).

In 2018, the OECD also released its first document on considerations for assessing the risks from the combined exposure to multiple chemicals. The report outlines the technical aspects of the various approaches and methodologies available with respect to the assessment of risks from combined exposures to multiple chemicals. The document draws from approaches applied and experience gained in the regulatory context (see <http://www.oecd.org/chemicalsafety/risk-assessment/>).

The objective of OECD's work on exposure assessment is to develop harmonised tools for assessing the exposure of chemicals to humans and the environment. In 2018, the OECD published a Product Release and Exposure Data Warehouse with data on releases of chemicals from, and exposures to, commercial and consumer end products (see <http://www.oecd.org/chemicalsafety/risk-assessment/product-release-and-exposure-data-warehouse.htm>).

Since ICCM4, the OECD released a number of guidance documents on core elements for setting up and implementing Pollutant Release and Transfer Registers (see <http://www.oecd.org/chemicalsafety/pollutant-release-transfer-register/>).

The OECD work on the safety of manufactured nanomaterials aims to promote international co-operation in human health and environmental safety related issues around manufactured nanomaterials, within the context of the industrial chemicals sector, in order to assist countries in the development of rigorous safety evaluation of nanomaterials. The work is implemented through several projects to further develop appropriate methods and strategies to help ensure human health and environmental safety. More than 80 documents have been published in the Series on the Safety of Manufactured Nanomaterials (<http://www.oecd.org/chemicalsafety/nanosafety/>).

Several documents and dedicated websites related to pesticides and biocides management have been published since ICCM4 (see <http://www.oecd.org/chemicalsafety/pesticides-biocides/>).

SAICM objective: Governance

The system of Mutual Acceptance of Data (MAD) is based on OECD Test Guidelines and OECD Principles of Good Laboratory Practice (<http://www.oecd.org/chemicalsafety/testing/>) and allows participating countries to share the results of various non-clinical safety tests done on chemicals and chemical products. By avoiding duplication of testing, the MAD system saves a considerable number of test animals, and around 300 EUR

million per year to governments and industry according to the report Saving Costs in Chemicals Management published in 2019: <http://www.oecd.org/chemicalsafety/saving-costs-in-chemicals-management-9789264311718-en.htm>.

Since ICCM4, more than 20 new or updated Guidelines for testing chemicals for health effects, environmental effects, and pesticide residue chemistry have been published, and more than 20 documents supporting Test Guidelines have been published in the Series on Testing and Assessment. An important part of the work on Test Guidelines was dedicated to screening or testing of endocrine disrupting chemicals. In 2018, an update of the Guidance document for evaluating chemicals for endocrine disruption was published (<https://doi.org/10.1787/9789264304741-en>)

SAICM objective: Capacity Building and Technical Cooperation

eChemPortal (www.echemportal.org) is continuously updated and now links to 34 individual databases. Recent focus of the expansion of eChemPortal focused on facilitating access to information on how chemicals are classified in different countries according to the GHS.

SAICM objective: Illegal International Traffic

In the area of the illegal international trade of pesticides, the **OECD Network on Illegal trade of Pesticides (ONIP)** developed a Best Practice Guide (BPG) to address issues related to fighting illegal trade, and to strengthen a “Global Alliance” against illegal trade of pesticides. Furthermore, on 20 February 2019 the OECD Council adopted the Recommendation on Countering the Illegal Trade of Pesticides. This Recommendation calls for, among other things, establishing or strengthening national procedures aimed at countering the illegal trade of agricultural pesticides in line with the BPG. The Recommendation and BPG are available on the [Compendium of OECD Legal Instruments](#).



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**Strategic Approach
to International
Chemicals Management**

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4 (a) of the provisional agenda*

**Progress towards the achievement of the 2020 overall
objective of the sound management of chemicals: progress
report for the period 2014-2106**

**Cooperation and coordination between the secretariat of the
Minamata and the Strategic Approach**

Note by the Secretariat

The secretariat has the honour to circulate, in the annex to the present note, information on activities under the Minamata Convention on Mercury as of 31 March 2019. The information has been submitted by the secretariat of the Minamata Convention. The present note, including its annex, has not been formally edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Update on the Minamata Convention on Mercury

I. Objective

1. The objective of the Minamata Convention on Mercury is to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. Its provisions cover the entire life cycle of mercury, including supply, trade, mercury-added products, industrial processes using mercury, artisanal and small-scale gold mining, emissions to air, releases to land and water, interim storage, waste and contaminated sites.

II. Entry into force of the Convention

2. The Convention was adopted at the Conference of Plenipotentiaries held on 10 and 11 October 2013, and entered into force on 16 August 2017, the 90th day after the date of deposit of the 50th instrument of ratification, acceptance, approval or accession. As of 31 March 2018, 107 governments and one regional economic integration organization have submitted such instrument.

III. First meeting of the Conference of the Parties

3. The first meeting of the Conference of the Parties was held in Geneva, Switzerland from 24 to 29 September 2017. The Conference elected Mr. Marc Chardonens, Switzerland, as president, and representatives of Antigua and Barbuda, Czech Republic, Gabon, Japan, Jordan, Mexico, Republic of Moldova, Sweden and Zambia as vice-presidents, to serve at its first meeting, during the intersessional period and at its second meeting. The Conference adopted the following 21 decisions, as attached to its report UNEP/MC/COP.1/29.

- MC-1/1: Rules of procedure
- MC-1/2: Guidance in relation to mercury supply sources and trade
- MC-1/3: Guidance in relation to mercury supply sources and trade in relation to certification
- MC-1/4: Guidance in relation to mercury emissions
- MC-1/5: Guidance to the Global Environment Facility
- MC-1/6: Specific international programme to support capacity-building and technical assistance
- MC-1/7: Membership of the implementation and compliance committee as referred to in paragraph 3 of article 15
- MC-1/8: Timing and format of reporting by the parties
- MC-1/9: Establishment of arrangements in regard to effectiveness evaluation
- MC-1/10: Financial rules for the Conference of the Parties to the Minamata Convention on Mercury and any of its subsidiary bodies, as well as financial provisions governing the functioning of the secretariat
- MC-1/11: Secretariat
- MC-1/12: Formats to be used in registering for an exemption from the phase-out dates listed in Annex A and Annex B and for the register of exemptions
- MC-1/13: Guidance on the preparation of national action plans for artisanal and small-scale gold mining
- MC-1/14: Mercury emissions related to the open burning of waste
- MC-1/15: Programme of work of the secretariat and proposed budget for the biennium 2018–2019
- MC-1/16: Guidance in relation to mercury emissions
- MC-1/17: Guidance in relation to mercury releases

- MC-1/18: Draft guidelines on the interim storage of mercury and mercury compounds referred to in paragraph 3 of article 10
- MC-1/19 : Mercury waste
- MC-1/20: Guidance on the management of contaminated sites
- MC 1/21:Capacity-building, technical assistance and technology transfer on the Minamata Convention on Mercury

4. In preparation for the first meeting of the Conference, a meeting of the bureau of the intergovernmental negotiating committee on mercury established pursuant to United Nations Environment Programme Governing Council decision 25/5 was convened in July 2017. Regional consultations for the African, Asia-Pacific, Central and Eastern European and Central Asian, and Latin American and the Caribbean regions were also convened in July 2017.

IV. Intersessional work between the first and second Conferences of the Parties

Technical work

5. The Conference of the Parties at its first meeting decided to seek input from governments and a range of other stakeholders on a number of issues.

6. Article 10 of the Convention provides that the Conference of the Parties shall adopt guidelines on the environmentally sound interim storage of mercury and mercury compounds other than waste mercury, taking into account any relevant guidelines developed under the Basel Convention and other relevant guidance. As requested by the Conference of the Parties in its decision MC-1/18, the secretariat revised the draft guidelines submitted to the Conference of the Parties at its first meeting, by seeking technical input from relevant experts and inviting comments from parties and other stakeholders, and submitted the draft to the Conference of the Parties at its second meeting.

7. Article 11 of the Convention defines mercury wastes as waste consisting of, containing or contaminated with mercury or mercury compounds in a quantity above the relevant thresholds defined by the Conference of the Parties, in collaboration with the relevant bodies of the Basel Convention in a harmonized manner. As requested by the Conference of the Parties in its decision MC-1/19, the secretariat compiled developed a report on the types of mercury waste and priorities and approaches for establishing the thresholds, by calling for submissions from experts nominated by parties and other stakeholders, and submitted the report to the Conference of the Parties at its second meeting.

8. Article 12 of the Convention provides that the Conference of the Parties shall adopt guidance on managing contaminated sites. As requested by the Conference of the Parties in its decision MC-1/20, the secretariat developed a draft guidance document by drawing on existing information and inviting comments from experts nominated by parties and other stakeholders, and submitted the draft to the Conference of the Parties at its second meeting.

9. Article 22 of the Convention provides that the Conference of the Parties shall, at its first meeting, initiate the establishment of arrangements for providing itself with comparable monitoring data on mercury and mercury compounds, for evaluating the effectiveness of the Convention. As requested by the Conference of the Parties in its decision MC-1/9, an ad hoc expert group on effectiveness evaluation was established and met in Ottawa, Canada, from 5 to 9 March 2018. The expert group produced a draft report, and submitted it to the Conference of the Parties at its second meeting.

Specific international programme

10. Article 13 of the Convention defines a mechanism for the provision of adequate, predictable and timely financial resources, which includes the Global Environment Facility Trust Fund and a specific international programme to support capacity building and technical assistance. Conference of the Parties adopted guidance on the operations of the specific international programme in its decision MC-1/6. Following this decision, the Executive Director of the United Nations Environment Programme established a specific trust fund for the specific international programme. In 2018, 1,284,837 United States dollars was made available in the trust fund, with contributions from Austria, Denmark, Germany, the Netherlands, Norway, Sweden, the United Kingdom and the United States of America.

11. A Governing Board consisting of 10 members was established to oversee and implement the guidance of the Conference of the Parties, including decision-making on projects and project management. The Governing Board met in Geneva, Switzerland, on 15 and 16 May 2018, and considered the application, screening and appraisal process for the programme. The secretariat launched the first round of application on 5 June 2018, with a deadline for submission of applications by 31 August 2018. A total of 19 applications were received from 18 parties. The Governing Board had its second meeting in Oslo, Norway, 2 and 3 October 2018, reviewed the applications submitted. The Board selected the following five projects to be funded by the programme:

- Argentina: Capacity building programme for the implementation of the Minamata Convention
- Armenia: Strengthening capacity to promote phasing-out of mercury-added products (lamps) in Armenia
- Benin: Improvement of management framework for mercury-containing products and wastes
- Islamic Republic of Iran: Implementing of Minamata Convention on Mercury - management in chlor-alkali plants in the petrochemical industry
- Lesotho: Strengthening institutional capacity in the development of a phase-out and phase down strategy for mercury-added products in Lesotho

Implementation and Compliance Committee

12. Article 15 of the Convention establishes an Implementation and Compliance Committee as a subsidiary body of the Conference of the Parties, to promote implementation of, and review compliance with, all provisions of the Convention. The Committee, consisting of 15 members elected by the Conference of the Parties at its first meeting, met in Geneva on 29 and 30 May 2018. The meeting was preceded by an information-sharing session on experiences from implementation and compliance mechanisms under other multilateral environmental agreements, including the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention), the Basel Convention and the Montreal Protocol on Substances that Deplete the Ozone Layer. The Committee adopted its rules of procedure.

V. Second meeting of the Conference of the Parties

13. The second meeting of the Conference of the Parties was held in Geneva, Switzerland, from 19 to 23 November 2018. The Conference adopted the following 11 decisions, as attached to its report UNEP/MC/COP.2/19.

- MC-2/1: Secretariat
- MC-2/2: Mercury waste thresholds
- MC-2/3: Releases
- MC-2/4: Rules of procedure for the Implementation and Compliance Committee of the Minamata Convention on Mercury
- MC-2/5: Time and venue of the third and subsequent meetings of the Conference of the Parties
- MC-2/6: Environmentally sound interim storage of mercury other than waste mercury
- MC-2/7: Cooperation between the secretariat of the Minamata Convention and the secretariat of the Basel, Rotterdam and Stockholm Conventions
- MC-2/8: Guidance on the management of sites contaminated by mercury and mercury compounds
- MC-2/9: Harmonized System Codes
- MC-2/10: Effectiveness evaluation
- MC-2/11: Article 14 – Capacity-building, technical assistance and technology transfer
- MC-2/12: Update on the budget for 2019

14. The Conference elected Mr. David Kapindula, Zambia, as president, and representatives of Canada, Costa Rica, Czech Republic, Gabon, Guyana, Islamic Republic of Iran, Jordan, Republic of Moldova and Sweden as vice-presidents, to serve during the intersessional period and at its third meeting.

15. In preparation for the second meeting of the Conference, the bureau had two teleconferences in December 2017 and April 2018, and met in Geneva, Switzerland, on 13 and 14 September 2018. Regional consultations for the African, Asia-Pacific, Central and Eastern European and Central Asian, and Latin American and the Caribbean regions were also convened in October 2018.

VI. Intersessional work between the second and third Conference of the Parties

Bureau meetings

16. The bureau of the Conference of the Parties had its first teleconference on 29 January 2019. It plans face-to-face meetings on 26 April and in September 2019.

Technical work

17. Article 9 of the Convention provides that the Conference of the Parties shall, as soon as practicable, adopt guidance on best available techniques and best environmental practices and the methodologies for preparing inventory of releases of mercury and mercury compounds to land and water from relevant point sources not addressed in other provisions of the Convention. As requested by the Conference of the Parties in its decision MC-2/3, A group of technical experts was established to identify significant point sources and to develop a roadmap and structure for the development of guidance on inventory. The group will work electronically.

18. On mercury waste thresholds, as requested by the Conference of the Parties in its decision MC-2/2, a group of technical experts was established to work on technical matters including the listing of mercury waste and the development of relevant approaches and methodologies for establishing thresholds for waste contaminated with mercury and mercury compounds. The group will meet in Osaka, Japan from 27 to 29 May 2019.

19. On the management of contaminated sites, as requested by the Conference of the Parties in its decision MC-2/8, the secretariat will develop a revised draft guidance taking into account the submissions from parties and other stakeholders and the comments from experts, for the consideration by the Conference of the Parties at its third meeting.

20. On effectiveness evaluation, as requested by the Conference of the Parties in its decision MC-2/10, the ad-hoc technical expert group will develop a report for the third meeting of the Conference of the Parties describing a draft effectiveness evaluation framework, proposed methodology and schedule for the evaluation, technical information on monitoring, and draft terms of reference for the effectiveness evaluation committee and the global monitoring arrangements. The group will meet in Geneva, Switzerland, from 8 to 12 April.

Specific international programme

21. The Governing Board of the specific international programme held its third meeting in Geneva, Switzerland, on 14 and 15 February 2019, and agreed to open the second round of application. The round started on 5 March 2019, inviting eligible parties to submit applications for project funding between 50,000 and 250,000 United States dollars. Applications have to reach the secretariat by 14 June 2019. As of 14 March 2019, 2,178,617 United States dollars is available for the operation of the programme in 2019.

22. The Governing Board will meet again on 18 and 19 to review the applications and select the projects to be funded.

Implementation and Compliance Committee

23. The Implementation and Compliance Committee will meet in Geneva, Switzerland, on 3 and 4 June 2019.

VII. Other activities of the secretariat

24. In addition to its work in support of the Conference of the Parties, the secretariat has supported activities at the national and regional levels to facilitate the ratification and early implementation of the Minamata Convention. Such activities include a training webinar on the mercury trade and the Minamata Convention in the Latin American and Caribbean region, held on 27 June 2018, and a support to a seminar and a workshop on the implementation of the Convention held in Tehran, the Islamic Republic of Iran, from 25 to 27 February.

25. The Executive Secretary and other staff of the secretariat participated in a number of relevant meetings including the meetings of the United Nations Environment Assembly, World Health Assembly, Global Environment Facility Assembly, and other relevant conventions.

26. The secretariat facilitates the information exchange and raises public awareness on the Convention through publications and website (<http://www.mercuryconvention.org>). The website provides information such as official documents including relevant guidance and formats, a database of projects for capacity-building and technical assistance, and publicity materials.

VIII. Status of Contributions to the Minamata Convention

27. The first meeting of the Conference of the Parties, in decision MC-1/15 on the programme of work of the secretariat and budget for the biennium 2018–2019, approved activities through the General Trust Fund amounting to USD 3,916,524 for 2018, and USD 3,843,074 for 2019. As of 22 February 2019, USD 3,110,825 was received for 2018, and USD 256,287 for 2019.

28. The first meeting of the Conference of the Parties further, in decision MC-1/15 on the programme of work of the secretariat and budget for the biennium 2018–2019, approved activities through the Special Trust Fund amounting to USD 3,192,250 for 2018 and USD 4,014,890 for 2019. As of 22 February 2019, USD 1,303,467 for 2018 has been received, and USD 721,429 has been pledged or received for 2019.

29. Contributors to the Special Trust Fund for 2018 and 2019 are: Austria, the European Union, Finland, France, Japan, Norway, Sweden and Switzerland.

30. Contributors to the Specific Trust Fund that supports the Specific International Programme in 2018 are: Austria, Denmark, Germany, the Netherlands, Norway, Sweden, the United Kingdom and the United States. Contributors for 2009 thus far include: Denmark, Norway, Switzerland, the United Kingdom, the United States.

IX. Cooperation in the chemicals and waste cluster

31. The secretariat, in performing its functions, cooperates with the secretariat of the Basel, Rotterdam and Stockholm conventions and Chemicals and Health Branch and other part of the United Nations Environment Programme. A task force consisting of relevant officials was established to enhance cooperation between the two secretariat and the Chemicals and Health Branch, as well as another task force on the post-2020 strategic approach to chemicals management. Cooperation and coordination are also enhanced through the participation in the Global Environment Facility's chemicals task force, the activities of the Inter-Organization Programme on the Sound Management of Chemicals, the Global Mercury Partnership, and the InforMEA initiative on access to information on multilateral environmental agreements. A number of events have been convened jointly, including the briefing sessions to the Geneva permanent missions facilitated by the Geneva Environment Network and regional meetings in preparation for the conferences of parties. Both secretariats cooperate on administrative procedures such as small-scale funding agreements. Staff of both secretariats and the Chemicals and Health Branch provide substantial and logistic support to each other's meetings, including the conferences of the parties. A number of Basel and Stockholm convention regional centres have been involved in capacity building and information sharing activities on the Minamata Convention.

32. Both secretariats and the Chemicals and Health Branch also cooperates on policy and technical matters. The secretariat of the Basel, Rotterdam and Stockholm conventions were invited to the meetings of the Implementation and Compliance Committee and the ad-hoc technical expert group on effectiveness evaluation. They are also involved in technical work on mercury releases, mercury waste and contaminated sites. Both secretariats and the Chemicals and Health Branch contribute to the implementation of the special programme to support institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm conventions, the Minamata Convention and

the Strategic Approach to International Chemicals Management, by appraising the proposals and participating in the meetings of its Executive Board.

X. Strategic Approach to International Chemicals Management

33. At the second meeting of the Conference of the Parties, it was noted that it was important that the Conference of the Parties actively follow and contribute to the discussions on the sound management of chemicals and wastes beyond 2020, in order to consider a new enabling multilateral framework for all relevant organisations active on the sound management of chemicals and waste, and also that mercury is adequately reflected within that future agenda.



SAICM/OEWG.3/INF/8

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**Strategic Approach
to International
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**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4 (a) of the provisional agenda*

**Progress towards the achievement of the 2020 overall
objective of the sound management of chemicals: progress
report for the period 2014-2106**

Cooperation and coordination between the secretariats of the Basel, Rotterdam and Stockholm conventions and the Strategic Approach

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a document on the involvement of the secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants in the Strategic Approach to International Chemicals Management. The report is presented as received by the secretariat, without formal editing.

* SAICM/OEWG.3/1.

Annex

Report on the involvement of the Secretariat of the Basel, Rotterdam and Stockholm conventions in the Strategic Approach to International Chemicals Management

1. The present note is submitted to the third session of the Open-Ended Working Group (OEWG) by the Secretariat of the Basel, Rotterdam and Stockholm Conventions (BRS Secretariat), to inform the OEWG of the activities carried out by the BRS Secretariat in support of SAICM and/or the cooperative activities undertaken between the SAICM and the BRS secretariats since the fourth session of the International Conference on Chemicals Management.

Mandates

2. Through various decisions¹, the conferences of the Parties to the Basel, Rotterdam and Stockholm conventions requested the BRS Secretariat to enhance cooperation and coordination with SAICM. At their meetings in May 2017, by their decisions BC-13/16, RC-8/10 and SC-8/20, on international cooperation and coordination, the conferences of the Parties to the three Conventions, among other things:

(a) Welcomed the resolutions adopted at the fourth session of the International Conference on Chemicals Management, including in particular the endorsement of the overall orientation and guidance for achieving the 2020 goal, and the resolution to launch an intersessional process on the sound management of chemicals and waste beyond 2020;

(b) Requested the Secretariat to continue to cooperate with the secretariat of the Strategic Approach in this respect and to participate in and provide relevant input to the Strategic Approach intersessional process on the sound management of chemicals and waste beyond 2020;

(c) Requested the Secretariat to continue to enhance cooperation and coordination with the secretariat of the Strategic Approach in areas of relevance to the Basel, Rotterdam and Stockholm conventions.

3. The text of decision BC-13/16, substantively similar to decisions RC-8/10 and SC-8/20, is set out in the appendix to this note.

Collaborative activities undertaken

4. Pursuant to the above-mentioned mandates, the BRS Secretariat has continued to cooperate closely with the secretariat of the Strategic Approach to International Chemicals Management (SAICM) in the following areas of work:

(a) The emerging policy issues and other issues of concern as identified by the International Conference on Chemicals Management (ICCM), in particular on chemicals in products; hazardous substances within the life cycle of electrical and electronic products; endocrine-disrupting chemicals; perfluorinated chemicals and highly hazardous pesticides;

(b) Policy and strategic issues, through the provision of inputs to the intersessional process to prepare recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020, in accordance with resolution IV/4;²

(c) Clearing-house mechanisms and information systems, in particular regarding the hosting of the new SAICM website

(d) Outreach and communication.

5. Furthermore, the BRS Secretariat submitted an information note on the contributions of the Basel, Rotterdam and Stockholm Conventions to the sound management of chemicals and wastes³, to the second meeting of the intersessional process on the sound management of chemicals and waste beyond 2020.

¹ See the 2013 synergies omnibus decisions (BC.Ex-2/1, RC.Ex-2/1 and SC.Ex-2/1); the 2015 COPs decisions on international cooperation and coordination (BC-12/17, RC-7/9 and SC-7/27).

² See SAICM/ICCM.4/15.

³ See SAICM/IP.2/INF.4

Appendix: Decisions BC-13/16, RC-8/10 and SC-8/20: International cooperation and coordination

BC-13/16: International cooperation and coordination

The Conference of the Parties

1. *Takes note* of the report by the Secretariat on international cooperation and coordination;⁴ the note by the Secretariat on integrating chemicals and waste management into the 2030 Agenda for Sustainable Development and the Sustainable Development Goals;⁵ and the information provided by the secretariat of the Strategic Approach to International Chemicals Management on the Strategic Approach and the sound management of chemicals and wastes beyond 2020;⁶
2. *Welcomes* the 2030 Agenda for Sustainable Development, which includes the sound management of chemicals and wastes as an essential and integral cross-cutting element of sustainable development;
3. *Emphasizes* the important contributions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants to supporting the Parties to those conventions in implementing the 2030 Agenda for Sustainable Development and the achievement of the relevant Sustainable Development Goals and associated targets;
4. *Takes note* of the methodology for the collection of data relevant to the indicators of the Sustainable Development Goals and requests the Secretariat to continue to cooperate with the United Nations Environment Programme and the secretariats of other chemicals and wastes-related multilateral environmental agreements to ensure a coordinated approach to the implementation of the methodology;
5. *Requests* the Secretariat to make available to the United Nations Environment Programme information relevant to the implementation of the 2030 Agenda for Sustainable Development submitted to it by Parties, as a contribution to the overall follow-up and review by the High-level Political Forum on Sustainable Development;
6. *Also requests* the Secretariat to continue to cooperate with the United Nations Environment Programme, the United Nations Statistics Division and other relevant organizations in the development of methodologies for indicators relevant to the Basel, Rotterdam and Stockholm conventions;⁷
7. *Further requests* the Secretariat, subject to the availability of resources, to assist Parties, upon request, in their efforts to integrate relevant elements of the conventions into their national plans and strategies for sustainable development, and, as appropriate, legislation;
8. *Welcomes* the adoption of relevant resolutions by the United Nations Environment Assembly at its second session, invites the Executive Director of the United Nations Environment Programme to take into account the work of the conventions in the implementation of those resolutions, and requests the Executive Secretary of the Basel, Rotterdam and Stockholm conventions to cooperate with the Executive Director of the United Nations Environment Programme in the implementation of those resolutions;
9. *Welcomes* the resolutions adopted at the fourth session of the International Conference on Chemicals Management, including in particular the endorsement of the overall orientation and guidance for achieving the 2020 goal, and the resolution to launch an intersessional process on the sound management of chemicals and waste beyond 2020, and requests the Secretariat to continue to cooperate with the secretariat of the Strategic Approach in this respect and to participate in and provide relevant input to the Strategic Approach intersessional process on the sound management of chemicals and waste beyond 2020;

⁴ UNEP/CHW.13/INF/38-UNEP/FAO/RC/COP.8/INF/27-UNEP/POPS/COP.8/INF/44.

⁵ UNEP/CHW.13/INF/39-UNEP/FAO/RC/COP.8/INF/28-UNEP/POPS/COP.8/INF/45.

⁶ UNEP/CHW.13/INF/54-UNEP/FAO/RC/COP.8/INF/42-UNEP/POPS/COP.8/INF/58.

⁷ In accordance with the decisions of the United Nations Statistical Commission.

10. *Requests* the Secretariat to continue to enhance cooperation and coordination with the interim secretariat of the Minamata Convention on Mercury and the secretariat of the Strategic Approach in areas of relevance to the Basel, Rotterdam and Stockholm conventions, as well as with the international organizations and the activities listed in the report by the Secretariat on international cooperation and coordination;⁸

11. *Also requests* the Secretariat to report on the implementation of the present decision to the Conference of the Parties at its next meeting.

⁸ UNEP/CHW.13/INF/38-UNEP/FAO/RC/COP.8/INF/27-UNEP/POPS/COP.8/INF/44.

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Strategic Approach
to International
Chemicals Management

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**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, Uruguay 2-4 April 2019

Item 4(c) of the provisional agenda*

**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Emerging Policy Issues**

**Emerging policy issues and other issues of concern - IOMC
response to requests from the fourth session of the
International Conference**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) on emerging policy issues and other issues of concern. This paper presents IOMC responses to requests from the fourth session of the International Conference and provides additional information to the paper prepared by the secretariat (SAICM/OEWG.3/6). The report is presented in the annex as received from IOMC and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Emerging policy issues and other issues of concern - IOMC response to requests from the fourth session of the International Conference.

This document provides additional detailed information prepared by the relevant lead organizations of the IOMC for those EPIs for which there were specific requests from ICCM-4.

1. Chemicals in products: report on progress (led by UN Environment, para 5 section B of resolution IV/2)

Information on progress on Chemicals in Products may be found in document SAICM/OEWG.3/6 - Emerging policy issues and other issues of concern.

2. §Hazardous substances within the lifecycle of electrical and electronic products: workplan on electronics for 2016-2020 (led by UNIDO, para 2 section C of resolution IV/2)

Summary

At ICCM3 (Nairobi, Kenya, 17-21 September 2012), new activities were added to the SAICM Global Plan of Action related to HSLEEP and a number of additional activities were highlighted for action in Resolution 3/2. UNIDO, as the coordinating agency within the ICCM3 for the emerging policy issue on HSLEEP led collective efforts to identify and assess key issues relating to HSLEEP and to develop a series of options and recommendations for future work which were provided to the SAICM Open-Ended Working Group and to the International Conference on Chemicals Management for its consideration and possible cooperative actions.

During ICCM4 (Geneva, Switzerland, 28 September - 2 October 2015), UNIDO on behalf of the IOMC reported on progress on HSLEEP (see SAICM/ICCM.4/INF/18) and introduced a proposed workplan for the period 2016–2020. The SAICM Secretariat also introduced a report on a related survey (see SAICM/ICCM.4/INF/27/Rev.1). It was identified that the issue is cross-cutting and, due to increasing complexity of the issue, it was important to deal with the matter in a collaborative manner. After discussions and exchanges, the Conference set a contact group to draft an omnibus resolution on emerging policy issues, including HSLEEP (see Annex I, Resolution IV/2, Chapter II, Section C, p. 44 and 45 of SAICM/ICCM.4/15).

In follow-up of Resolution IV/2, Chapter II, Section C, relevant SAICM stakeholders that include the SAICM Secretariat, the Basel, Stockholm and Minamata Conventions, UNU, ITU, ILO, WHO, UNEP (currently UN Environment), UNIDO, Step, PACE (Partnership for Action on Computing Equipment until the end of 2017), and later the EMG through the Issue Management Group (IMG) on e-waste, have continued implementing their own activities with due attention to the recommendations set by the Conference. However, a collective attempt to get funding for the HSLEEP EPI did not materialize and so the activities to address HSLEEP have remained unfunded and many of them have not been yet tackled. On the other hand, UNIDO, in partnership with the SAICM Secretariat and other IOMC organizations and relevant stakeholders, undertook the process of developing and finalizing the workplan 2016–2020 (included in Section V of this document), as requested by the Conference. Further efforts until 2020 are expected on promoting Green Purchasing, Design for Environment and tracking of substances within the production process along their life cycle.

Furthermore, in response to a substantial increase in global e-waste generation and considering the many existing e-waste initiatives and active stakeholders in the UN system, in May 2016 the UN Environment Management Group (EMG) established an inter-agency Issue Management Group (IMG) on e-waste, which in 2017 published a report on the United Nation's System-wide Response to Tackling E-waste, which mapped the characteristics of UN e-waste initiatives and the UN entities involved. Based on recommendations of that report, the IMG has set three work streams currently under development.

However, important gaps remain for getting the 2020 goal of the Global Action Plan, from which the main two are: (1) The current focus of the workplan on the upstream level, which requires streamlining discussions with EEE manufacturers to provide them with information regarding the use of hazardous substances in EEE, which in turn is essential for requesting

them to enhance the environmentally friendly design of EEE. (2) The lack of funding by the SAICM concerned stakeholders to tackle the activities stated in the workplan 2016-2020, which remains currently unfunded.

I. Background

1. Electrical and electronic equipment (EEE) contain hazardous substances like beryllium, mercury, lead, arsenic, polyvinyl chloride (PVC), brominated flame retardants (BFRs) or phthalates.
2. Besides the problems these substances may cause during the production process and throughout the whole life cycle, the treatment of EEE at the end-of-life (e-waste) is a great concern, particularly in developing countries and countries with economies in transition where rudimentary methods may be applied to recover valuable fractions from e-waste, including open burning of cables to recover copper or leaching of printed circuit boards to recover gold, silver or palladium, which harm the environment and human health.
3. Initiatives during all stages of the EEE life cycle, from production to final disposal need to be implemented to properly and sustainably address the emerging policy issue of hazardous substances within the lifecycle of electrical and electronic equipment (HSLEEP).
4. At ICCM3 (Nairobi, Kenya, 17-21 September 2012), new activities were added to the SAICM Global Plan of Action related to HSLEEP and a number of additional activities were highlighted for action in Resolution 3/2.
5. UNIDO, as the coordinating agency within the ICCM3 for the emerging policy issue on HSLEEP, had organized an international workshop in 2011 in cooperation with SAICM and the Basel Convention Secretariat. It was concluded that more efforts needed to be taken to tackle the issue of hazardous substances within e-products. So, UNIDO led collective efforts to identify and assess key issues relating to HSLEEP and to develop a series of options and recommendations for future work which were provided to the SAICM Open-Ended Working Group and to the International Conference on Chemicals Management for its consideration and possible cooperative actions.

II. Introduction

6. During ICCM4 (Geneva, Switzerland, 28 September - 2 October 2015), at the request of the President, UNIDO on behalf of the IOMC, reported on progress on HSLEEP, outlining the information set out in a UNIDO report (SAICM/ICCM.4/INF/18), which contained a proposed workplan for the period 2016–2020. The SAICM Secretariat also introduced at the meeting a report on a survey related to the issue (SAICM/ICCM.4/INF/27/Rev.1). It was identified that the issue is cross-cutting and, due to increasing complexity of the issue, it was important to deal with the matter in a collaborative manner.
7. After discussions and exchanges, the Conference decided that the contact group established to consider emerging policy issues and other issues of concern would further discuss hazardous substances within the life cycle of electrical and electronic products, with the aim of preparing a draft resolution for inclusion in a draft omnibus resolution on emerging policy issues for consideration by the Conference. So, following the work of the contact group the Conference adopted resolution IV/2, an omnibus resolution on emerging policy issues, including HSLEEP (Annex I of the report SAICM/ICCM.4/15).
8. The Conference, in its omnibus resolution IV/2, on emerging policy issues, included HSLEEP (Annex I, Resolution IV/2, Chapter II, Section C, p. 44 and 45 of SAICM/ICCM.4/15).
9. It encourages stakeholders to: (a) Consider and implement, as appropriate, the Strategic Approach Global Plan of Action, particularly the actions related to hazardous substances in electrical and electronic products adopted by the International Conference on Chemicals Management at its third session; (b) Maximize risk reduction by encouraging original equipment manufacturers to adopt sustainable design and safer processes for production, waste management and recycling of electrical and electronic products throughout the supply chain and life cycle; (c) Widely disseminate the report of, and consider the recommendations made and the key messages delivered on hazardous chemicals within the life cycle of electrical and electronic products by the participants in, the international workshop on hazardous substances within the life cycle of electrical and electronic products held in Vienna from 29 to 31 March 2011 when deciding on further actions to take in respect of such chemicals;
10. It invited UNIDO, in partnership with other organizations of the IOMC and relevant stakeholders to undertake a process to develop and finalize the workplan 2016–2020 set out in the note by the secretariat (SAICM/ICCM.4/INF/18), including by: (a) Soliciting comments and input on the workplan from Strategic Approach stakeholders; (b) Revising the workplan on the basis of comments received from Strategic Approach stakeholders and including indicators of progress to be reported by stakeholders as part of the report to be developed for consideration by the Conference at its fifth session;

11. It encouraged SAICM stakeholders to take steps to enhance their involvement and efforts to develop and implement the workplan wherever possible, in particular the International Labour Organization in addressing worker safety in the production of electrical and electronic products throughout the supply chain, as well as in waste management and recycling;
12. It also encouraged meaningful engagement of all SAICM stakeholders to consider the recommendations from the Vienna workshop when deciding on further actions to take, in particular to: (a) Promote advocacy, awareness, information, education and communication about hazardous chemicals in electrical and electronic products for vulnerable groups and relevant stakeholders along the supply chain beginning in 2016; (b) Encourage original equipment manufacturers to work with their supply chains to develop and implement sustainable and effective electrical and electronic product take-back programmes; (c) Encourage original equipment manufacturers to work with their supply chains to establish and implement industrial hygiene and environmental monitoring programmes; (d) Facilitate the implementation of procurement initiatives that favour improved safety and sustainability profiles of electrical and electronic products, including chemicals used in manufacturing; (e) Encourage original equipment manufacturers to collect and provide health and safety information to workers on chemicals they are handling or exposed to in electrical and electronic products manufacturing;
13. Finally, it encouraged relevant stakeholders to consider implementing the chemicals in products programme in order to provide access to information on hazardous chemicals in the life cycle of electrical and electronic product.

III. Project activities and outcomes

14. Relevant SAICM stakeholders that include the SAICM Secretariat, the Basel, Stockholm and Minamata Conventions, UNU, ITU, ILO, WHO, UNEP (currently UN Environment), UNIDO, Step, PACE (Partnership for Action on Computing Equipment until the end of 2017), and later the EMG through the Issue Management Group (IMG) on e-waste, have continued implementing their own activities with due attention to the recommendations set by the Conference, in its omnibus resolution IV/2 (see paras 9 to 13 above). However, a collective attempt to get funding for the HSLEEP EPI did not materialize and so the activities to address HSLEEP have remained unfunded and many of them have not been tackled.
15. The ILO has namely produced a number of publications including:
 - a) The Global impact of e-waste-year 2012
https://www.ilo.org/sector/Resources/publications/WCMS_196105/lang--en/index.htm
 - b) Tackling informality in e-waste management: The potential of cooperative enterprises-year 2014
https://www.ilo.org/sector/Resources/publications/WCMS_315228/lang--en/index.htm
 - c) The labour, human health and environmental dimensions of e-waste management- year 2015
https://www.ilo.org/beijing/what-we-do/publications/WCMS_375174/lang--en/index.htm

Regarding para 10 above, UNIDO, in partnership with the SAICM Secretariat and other IOMC organizations and relevant stakeholders, undertook the process of developing and finalizing the workplan 2016–2020 set in document SAICM/ICCM.4/INF/18. For this purpose, UNIDO (a) Solicited comments and input on the workplan from SAICM stakeholders; (b) Revised the workplan on the basis of the comments received from SAICM stakeholders and has remained attentive to further developments, particularly getting funding for the implementation of the workplan, which would include indicators of progress to be reported by stakeholders as part of the report to be developed for consideration by the Conference at its fifth session. The reworked workplan 2016–2020, as requested by the Conference is in Section V. of this report.

16. Further efforts in the time period until 2020 will be put on promoting Green Purchasing, Design for Environment and tracking of substances within the production process along their life cycle. This includes procurement initiatives that favour greener products based on the toxicity of chemicals and materials used in products and manufacturing. A list of chemicals of concern to human health and the environment used in

electronics production and products will facilitate these green design and procurement initiatives. Templates for meaningful worker and community right to know policies will help address findings from the SAICM Secretariat mapping exercise. Finally, to address end of life issues, take-back programs and Extended Producer Responsibility policies will be further developed and implemented.

17. In response to a substantial increase in e-waste generation worldwide and taking into consideration the many existing e-waste initiatives and active stakeholders in the UN system, in May 2016 the Senior Officials of the UN Environment Management Group (EMG) established an inter-agency Issue Management Group (IMG) on e-waste. In 2017, the IMG published a report on the United Nation's System-wide Response to Tackling E-waste, which mapped the characteristics of UN e-waste initiatives and the UN entities involved. Based on recommendations of the report, the IMG has set three work streams currently under development:

- (1) Strengthening of programmatic collaboration through undertaking analysis of UN entities' decisions, mandates and programmes on tackling e-waste and mapping the various stakeholders involved in e-waste outside the UN system;
- (2) Development of a draft work plan to establish an online standalone knowledge sharing platform on e-waste, to support communications and knowledge sharing among UN entities; and,
- (3) Deepening the liaison between the expertise held in this IMG on Tackling E-waste, and the corporate work on procurement and waste management undertaken internally within the UN system.

Based on the work developed by the IMG, a UN Coalition to tackle electronic waste was set in March 2018, as per the below link during the World Summit on the Information Society (WSIS) Forum organized by ITU. The UN Coalition seeks to increase coordination and collaboration between the United Nations agencies to tackle the growing e-waste problems. The Letter of Intent was signed by UN Environment, the International Telecommunication Union (ITU), United Nations University (UNU), the International Labour Organization (ILO), the Secretariat of the Basel and Stockholm Conventions, the United Nations Industrial Development Organization (UNIDO) and the United Nations Institute for Training and Research (UNITAR). Proper e-waste management would allow for circular economy and efficient recovery of the valuable resources in electronic equipment, which in turn would lead to economic growth. It would also impact a number of SDGs, specifically those related to environment, health and decent work.

<https://news.itu.int/new-un-coalition-to-tackle-electronic-waste/>

IV. Gaps remaining and implications for the 2020 goal

18. The 2020 goal mainly focuses on: (a) Developing and implementation of e-waste legislations and regulations within the majority of countries, including incentives for the treatment of hazardous fractions and standards for responsible and safe EEE management, focusing on the entire product life cycle from eco-design to final disposal and recycling methods (b) Efficient supply chains and strengthening of circular economy on a global level; (c) Minimization of usage of hazardous substances during the production process of EEE and increased communication regarding the use and occurrence of chemicals within EEE.

19. The activities so far have focused on providing support to developing countries and countries with economies in transition in order to set-up sustainable strategies for e-waste, which includes capacity building activities as well as the provision of guidelines for their implementation.

20. The main gaps that remain regarding the implementation of the Global Action Plan are due to two reasons: (1) The focus of the workplan is now on the upstream level; therefore, more efforts are required in order to streamline discussions with manufacturers in order to provide them with information regarding the use of hazardous substances in EEE, which in turn is essential for their use to enhance the environmentally friendly design of EEE. (2) The lack of funding by the SAICM concerned stakeholders to tackle the activities stated in the workplan. Unfortunately, except just a few of them, most activities remain currently unfunded.

21. Another gap regarding the implementation of the Global Action Plan is the development and implementation of green purchasing standards at government level and in the private sector. This issue was to be taken-up during the implementation period to achieve the 2020 goal, but there is uncertainty regarding the achievement of the goal.

V. Proposed Work Plan

22. As stated in paragraph 10, UNIDO with the SAICM Secretariat and other IOMC organizations and relevant stakeholders, developed and finalized the workplan 2016–2020. During the first part, stakeholders were requested to provide comments and inputs on the existing work plan, and efforts were taken to enhance their

involvement and efforts to develop and implement the work plan. At a teleconference on 18 February 2016, some key stakeholders provided a status update on the HSLEEP work plan, which was further reviewed as of June 2016. After that, all stakeholders were invited to review the draft work plan and provide any additional comments or inputs to it.

23. The last version of the plan follows, but as already mentioned, since a collective attempt to get funding for the HSLEEP EPI did not materialize, the activities to address HSLEEP have remained unfunded and many of them cannot be tackled. So, plan implementation is quite uncertain at this time.

DRAFT WORK PLAN ON HAZARDOUS SUBSTANCES WITHIN THE LIFE-CYCLE OF ELECTRICAL AND ELECTRONIC PRODUCTS (HSLEEP) 2016-2020

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016-2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
COMPONENT 1: Reduction of exposure to hazardous substances in e-products through improved information, policy tools, and green design of electrical and electronic products			
1. Compile and communicate lists of chemicals in e-products of concern to human health and/or the environment.	1.1 Finalize the survey on HSLEEP and disseminate outcomes by mid-2016 –<i>SAICM Secretariat</i> 1.2 Determine the extent of leakages of hazardous substances caused by low collections and inadequate recycling methods and propose measures to be taken –<i>UNU</i> 1.3 Include consideration of ‘The Chemicals in Products Programme’s document UNEP, 2015) and its companion ‘Chemicals in Products Programme Guidance for	Survey online for comments and finalized by mid-2016. ILO to forward study on this to the Secretariat UNU is actually mobilizing resources for a 2nd edition of the Global E-waste Monitor in 2017. This requires substantial data gathering, especially in some regions, and analysis. UNU is actually teaming up with others in these efforts.	Overview of all existing e-product categories as per the UNU-keys and based on this development of overview on chemicals used (actually and historically). Building on this, the ecological rucksacks through production, usage and consumption should be gathered. Based on the above, common inappropriate, low-level recycling methods should be described and compared to appropriate treatment and

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	stakeholders on exchanging chemicals in products information’ (UNEP, 2015) – <i>UNEP</i>		recycling options, illustrating the emissions of hazards to the environment and human health.
2. Promote public and private partnerships on product stewardship approaches and extended producer responsibility (EPR) for the sustainable management of hazardous substances in	2.1 Continue Step and PACE mandates to further promote and enhance public-private partnerships. Through these platforms best practices and successful examples of partnerships will be shared – <i>Step and PACE</i> .	Step mandate is not time-bound, but PACE mandate is in force until 2017 (with an ad-hoc group to undertake future activities). ITU-T Study Group 5 “Environment and Climate Change” develops international standards and guidelines in this area and promotes public- private partnerships among its members. UNU has approached ITU, UNIDO and UNEP for the development of “UN-E-waste”,	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
e-products during their production, use and at the end of life.	2.2 Establish “UN-E-waste” or an UN interagency Issue Management Group (IMG) to enhance coordination on efforts undertaken by various UN agencies in the field of HSLEEP activities within the UN system (with support of the UN Environment Management Group (EMG) – <i>Relevant UN organizations</i> 2.3 Develop a roadmap for the ICT sector to meet the environmental sustainability goals set by ITU Membership through the Connect 2020 Agenda (Target 3.2: reduce the volume of redundant e-waste	which later helped set an IMG on E-waste under the EMG. ITU initiated a request to coordinate activities on e-waste among the UN agencies which has led to the EMG to consider a potential Issue Management Group (IMG) on e-waste. In response to UNU’s and ITU’s activities, the EMG Secretariat has requested stakeholders to nominate their focal points on e-waste and assess the TOR for an Issue Management Group (IMG) on E-waste and provide rational on how EMG can add value to this work. The EMG Senior Officials at their meeting in September 2016 accepted the TORs for the IMG on ‘Tackling E-waste: Towards Eco-design and a Life-cycle Approach for E-products - Coordinating delivery by the United Nations’ and the proposed work plan of the group until end of 2017. ITU in partnership with the BRS Conventions Secretariat, ECLAC and other stakeholders is developing a Roadmap to meet the targets set by its Connect 2020 Agenda. These activities include:	

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	by 50% by 2020) <i>– ITU funded activity</i>	• Standardized Assessment: The proposal includes the establishment of the KPI baseline. • E-waste Management and Policy Program. Creation of Reflector to invite other stakeholders to participate. • Awareness Raising and Outreach: An awareness campaign is foreseen to start after the two activities listed above are in a more advanced stage. An update draft proposal to be discussed by ITU-T Study Group 5 on Oct. 2016.	
3. Analyze, assess and fill gaps in existing policies and legal institutional frameworks addressing design of e-products as applicable.	3.1 On the basis of available information, collect additional information regarding existing policies and legal institutional frameworks – <i>UNU, PACE, Step, UNEP-IETC, BRS Secretariat</i>	UNEP IETC with the Basel Convention Regional Centre for South-east Asia (BCRC-SEA) has been conducting the study for E-waste management in the ASEAN member states. UNEP IETC has developed Guidelines for Framework Law on Waste Management. These support countries to introduce or enhance their waste management legislation for integrated waste management that can be adapted for E-waste management. UNU has published studies on the legal and policy situation in	

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		Europe and Latin America. Another study on East and Southeast Asia is to be published Summer 2016. ITU together with WHO, the BRS Conventions Secretariat, UNESCO, UNIDO, UNU, WIPO, BCRC-South America and ECLAC have jointly published a report on Sustainable management of waste electrical and electronic equipment in Latin America. The report is available as a flipbook in English (under the link http://wftp3.itu.int/pub/epub_shared/TSB/2016-Integrated-mngnt/index.html#p=1) and Spanish (under the link http://wftp3.itu.int/pub/epub_shared/TSB/2016-Integrated-mngnt-ES/index.html#p=1).	
4. Encourage approaches to green design of e-products by quantifying materials that could be recovered and identifying the tools and best practices	4.1 Map existing initiatives and assess what works and what does not (and why). <i>UNU, ITU, PACE, Step, UNEP-IETC, BRS Secretariat</i> 4.2 Publicly promote initiatives that are	The SAICM Secretariat should contact the NGOs that are affiliated to SAICM to assess their potential contributions to 4.2. ITU is working on these areas and should advise regarding progress. It has published a series of international standards and supplements on guidelines for developing a sustainable e-	.

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
to advance design for reduction, elimination and substitution of hazardous chemicals. Implement regulations and develop further actions promoting ‘sustainable e-products’ available for consumers.	taken by manufacturers regarding green design and further develop guidance to greener electronics to rank producers according to their performance – <i>ITU, NGOs (e.g. Greenpeace, BAN, IPEN)</i> 4.3 Develop and implement ITU-T standards including ITU-T L.1000 (universal power adapter and charger solution for mobile terminals and other hand-held ICT devices), ITU-T L.1001 (external universal power adapter solutions for stationary information and communication technology devices) and ITU-T L.1002 (draft - External universal	waste management system and life-cycle management of ICT goods. UNIDO should contact ITU to follow-up on the corresponding status of development or implementation, or on what is required. UNEP IETC has been developing Guidelines for recycling e-waste, including primary and secondary dismantling. Step has developed White and Green Papers in this area. UNU’s work on “Computers and the Environment” also provides some guidance.	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
	power adapter solutions for portable information and communication technology devices), ITU-T L.1010 (Green battery solutions for mobile phones and other hand-held information and communication technology devices), ITU-T L.1100 (Procedure for recycling rare metals in information and communication technology goods), ITU-T L.1102 (Use of printed labels for communicating information on rare metals in information and communication technology goods), ITU-T L. Suppl.4 (Guidelines for		

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
	developing a sustainable e-waste management system, ITU-T L.1300 (best practices for green data centres) and ITU-T L. Suppl. 24 (Overview of climate change effects and possible impacts).– <i>ITU funded activity</i>		
5. Adopt policy instruments to address hazardous chemicals reduction, elimination or substitution in electrical and electronic products. When doing so, consider the work of standardization bodies on	5.1 Map existing guidance documents to find out which ones should be supported and to avoid contradictions among them. Include the CiP documents under 1.3. above. 5.2 Actively disseminate and promote existing guidance documents	BRS Secretariat has technical guidelines on transboundary movement of e-waste, which were adopted on an interim basis by COP12. Basel Convention Parties and other stakeholders are invited to provide inputs on their experiences in the implementation of the technical guidelines, with the view of possible updating and finalizing the TGs at future COP. PACE has developed guidelines on reuse, repair and refurbishment, as well as on material recovery and recycling.	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
the definition of threshold values for the maximum content of hazardous substances in products.	regarding internationally applied policy instruments – <i>UNIDO, UNU, Step, PACE, UNEP-IETC, BRS Secretariat, ITU</i> 5.3 Within ongoing and up-coming projects, support governments to properly address the sound treatment and disposal of hazardous substances – <i>UNIDO, UNU, BRS Secretariat, UNEP-IETC, ITU</i> 5.4 Develop capacity building activities including trainings to help governments and private sector implement e-waste management policies, toolkits and international standards – <i>ITU</i>	The final PACE ‘Guidance document on the environmentally sound management of used and end-of-life computing equipment’ will be submitted to the Basel Convention Conference of the Parties in 2017 for adoption. ILO, in April 2019, will held a Forum to discuss current and emerging issues related to the promotion of decent work in the management of electrical and electronic waste (e-waste), with the aim of adopting points of consensus, including recommendations for future action by the ILO and its Members. Under the GEF-UNIDO e-waste project for Latin American countries, ITU will develop two case studies on the implementation of ITU-T standards and provide recommendations on e-waste management and circular economy in two selected participating countries. In addition, it will execute national and regional events to support the implementation of an environmentally sound and sustainable e-waste management through the use of	

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	<i>funded activity. Others can get involved depending on available funding</i>	international standards and awareness rising on issues related to the WEEE and the transition to a circular economy.	

6. Promote sustainable production and pollution prevention, and encourage sustainable consumption of e-products (linked to SDG12).	6.1 Conduct research and development on safer chemicals substitutes, or safe alternatives, and safer production processes for e-products. – <i>UNU, WHO, UNEP-IETC.</i> 6.2 Disseminate information on the overall positive effects to the environment of sustainable consumption of e-products – <i>UNU, WHO, UNEP-IETC, UNIDO, BRS Secretariat, ITU</i> 6.3 Continue ongoing work with various partners to avoid/reduce e-waste using Digital Object Architecture (DOA)-based technical IoT solutions to ensure cradle-to-grave traceability of WEEE – <i>ITU funded activities</i>	UNEP SCP (Sustainable Consumption and Production) team has been undertaking activities linked to consumers to look at the life span of products and their environmental impact. As Secretariat of the 10-Year Framework of Programmes (10YFP) for sustainable development, UNEP has launched a Consumer Information Programme that has issued a Call for Proposals inviting governments and not-for-profit organisations from developing countries and countries with economies in transition, to submit proposals for projects that contribute to capacity building, and advancing research and sustainability information. Mauritius reports having participated in such Call for Proposals; however, its proposal was not retained. ITU has been developing activities to encourage companies to design their products in an eco-friendly manner; it supports national campaigns at the national level within its 193 Member States.	
7. Prioritize the reduction of exposure; eliminate or	7.1 Formulate, promote and implement health-based exposure	UNIDO should contact WHO to advise on ongoing activities in this area.	

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substitute hazardous substances of concern in e-products and their production processes; and promote procurement processes that include this objective.	limits for workers handling e-products that provide equal protection in the workplace and the community – <i>WHO, ILO</i> 7.2 Closely work with OEMs in order to substitute hazardous substances in their products – <i>UNU, UNIDO, ITU, UNEP-IETC</i> 7.3 Continue working on raising consumers’ awareness regarding the use of hazardous substances and related practices of OEMs - <i>NGOs</i>	ILO should take into consideration Paragraph 3 of Part C, ICCM Resolutions IV/2 with regards to workers safety PACE has developed a ‘Manual on steps to establish and implement the environmentally sound management of used and end-of-life computing equipment’ to provide Governments and companies with an overview of the essential elements to establish, maintain and strengthen the environmentally sound management of used and end-of-life computing equipment. UNEP, as Secretariat of the 10-Year Framework of Programmes (10YFP) for sustainable development, has launched draft ‘Guidelines for Providing Product 4 Sustainability Information’ for Global Stakeholder Consultation. (see under http://www.unep.org/10yfp/Portals/50150/10YFP%20CI/Guidelines%20for%20providing%20product%20sustainability%20information_draft%20for%20global%20consultation.pdf). Box 7 of this document illustrates the case of ‘accessibility of	

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		information for disposal of electronic products'	
COMPONENT 2: Reduction of exposure to hazardous substances in e-waste by supporting the implementation of the SC and BC, the development of policy incentives, and the coordination of pilot projects on e-waste management			
8. Identify opportunities to support the work of the Basel Convention and the Stockholm Convention in developing policies on the environmental ly sound management of e-waste and on the control of transboundary movements of hazardous waste.	8.1 Involve the BC and the SC Regional Centres as executing partners in ongoing and planned projects. For example the Centres are actively involved in the regional UNIDO project proposal in Latin America – <i>UNIDO, ITU, UNEP-IETC, UNU, BRS Secretariat</i>	PACE is developing a concept for ESM of e-waste for regional and national-level actions to be led by Regional Centres which is to be presented to the BC-COP in 2017. UNU has a MoU with the Secretariat of the Basel Convention to further support the Basel Convention work. E-waste related activities also support the implementation of the Stockholm Convention. UNIDO, through its GEF-funded E-waste project for Latin American countries, has involved the BC and SC Regional Centres of Uruguay, Argentina, Panama and Brazil, as project executing partners.	
9. Establish voluntary approaches, the use of economic instruments, other	9.1 Enhance collaboration to establish voluntary approaches at the international level and disseminate	PACE has developed a 'Report on strategies, actions and incentives to promote environmentally sound management for used and end-of-life computing equipment'.	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
incentives, ex-tended producer responsibility and e-products take-back schemes, as appropriate, building on existing national and international activities.	information regarding existing models and best practices e.g. from more advanced countries – <i>UNIDO, UNU, Step, PACE, BRS Secretariat, ITU, UNEP</i>	UNIDO, through its GEF-funded E-waste project for Latin American countries, has involved RELAC, the Regional Platform for Electronic Waste in Latin America and the Caribbean, as project executing partner to support the harmonization of key issues of e-waste policies at the regional level, and to strengthen the knowledge management systems and information exchange on e-waste related issues. Also, under this GEF LAC E-waste project, UNIDO has involved UNU as project executing partner to carry out at least three E-waste Academies for Managers (EWAM) for small and medium-sized enterprises (SMEs) and policy-makers, and at least one E-waste Academy for Scientists (EWAS). In addition, UNU in cooperation with ITU will conduct a regional E-waste Monitor for Latin America within the Global E-waste Statistics Partnership by 2020.	
10. Conduct pilot projects leading to	10.1 Continue ongoing efforts to implement pilot	PACE implements pilot projects launched under its work programme in Burkina Faso, El	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
financially self-sustaining initiatives on socially, economically and environmentally sound e-waste management without duplicating or overlapping roles or responsibilities, including activities under the Stockholm Convention and the Basel Convention.	projects with due coordination, e.g. funded by the GEF – <i>UNIDO</i>, <i>UNEP</i>, <i>WHO</i>, <i>ILO</i>, <i>ITU</i>, <i>UNU</i>, <i>BRS Secretariat</i>	Salvador and the Central American region, Jordan, Moldova, Serbia, South Africa in cooperation with Lesotho and Namibia, and Suriname. All the pilot projects are to be completed in 2016. A report on project experiences and lessons learned will be developed based on the outcome of the pilot projects. Under the GEF-UNIDO e-waste project for Latin American countries, ILO will implement country projects in Argentina and Peru to develop labour market policies, strengthen capacities of employers, workers and governments, analyze the employment situation in e-waste and improve working conditions in the e-waste value chain from 2018 to 2020. Also, under the GEF-UNIDO e-waste project for Latin American countries, the WHO through the PAHO will develop two country pilot projects to strengthen e-waste interventions with the aim of protecting human health. They will also prepare and deliver two related	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
		awareness raising and capacity building events.	
COMPONENT 3: Knowledge management on HSLEEP to improve information, awareness education and communication, with wide participation of all relevant stakeholders			
11. Promote awareness, information, education and communication for all relevant stakeholders along the supply chain of hazardous chemicals within the life-cycle of e-products.	11.1 Organize events, workshops and conferences, on a regular basis, for target groups including policy makers, the private sector (SMEs and OEMs), international organizations, NGOs and the broad public – <i>Step, PACE, UNIDO, UNEP, BRS Secretariat, SAICM, ITU, ILO, WHO</i> 11.2 Enhance the organization of Step E-Waste Academies – <i>UNU</i> 11.3 Widely disseminate and promote consideration of the report of the international	BRS Secretariat and SAICM organized the regional Africa e-waste workshop in Lagos in October 2015. The BRS Secretariat launched a Massive Open Online Course (MOOC) on e-waste in April 2016. It is also organized a regional workshop on enhancing capacities for the environmentally sound management of waste electrical and electronic equipment through the regional delivery in Eastern Europe and Central Asia in Bishkek, Kyrgyzstan, in July 2016. ITU together with the Secretariat of the Basel Convention, ECLAC, UNIDO, WHO, ILO and WIPO held a workshop on 5 May 2016 to discuss on how to advance the cooperation with the ICT industry on the supply chain of hazardous chemicals within the life-cycle of e-products.	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
	workshop on hazardous substances within the life cycle of electrical and electronic products held in Vienna on March 2011, as reported under document SAICM/ICCM.3/INF/24 (see) (SMEs and OEMs), international organizations, NGOs and the broad public – <i>All stakeholders</i>	On 5 May 2016, ITU in partnership with the BRS Secretariat, ECLAC, UNIDO, the WHO and WIPO held a workshop entitled “Towards building effective partnerships for sustainable management of e-waste”, as part of the ITU-WSIS 2016. (The programme is under the link https://www.itu.int/net4/wsis/forum/2016/Agenda/Session/158; the outcomes are under the link https://www.itu.int/net4/wsis/forum/2016/Content/documents/outcomes/WSISForum2016%E2%80%9494ForumTrack-Outcomes.pdf) A session on “Fitting e-waste into the circular economy” was held on 5 September 2016, in Montevideo, Uruguay, as part of ITU’s Sixth Green Standards Week. The presentations of the session are available at: https://www.itu.int/en/ITU-T/Workshops-and-Seminars/gsw/201609/Pages/programme-20160905.aspx ITU together with the National University of La Plata and the Chamber of the Senator of the Province of Buenos Aires, organized a Forum on “The catalytic role of ICTs to achieve	

PROPOSED ACTIVITY AREAS (extracted from the Global Plan of Action)	PROPOSED ACTIONS 2016- 2020	Status - updated from 18 February 2016 stakeholders teleconference and June 2016 reviews, further updated by UNIDO and ILO in 2018	Additional planned or proposed actions
		Sustainable Development Goals 11, 12 and 13” on 12 September 2016 in La Plata, Argentina. This Forum was held in Spanish only. UNIDO, after GEF approval of its LAC E-waste project, conducted a kick off meeting in Ecuador, in March 2018, with the presence of representatives of the 13 participating countries, regional centers and other project partners like UNU, ITU, the WHO, ILO, ISWA, RELAC, DELL and others. In 2019, the ILO will publish research papers concerning e-waste, including a global issues paper and national studies in Argentina, India and Nigeria.	

3. Endocrine-disrupting chemicals (EDCs): further development and implementation of the plan of work for cooperative actions (led UNEP, WHO, OECD, para 4 section E of resolution IV/2)

I. Background and Introduction

In Resolution IV/2: Emerging policy issues, Part I Introduction, the International Conference on Chemicals Management reaffirmed its resolutions II/4 and III/2 on emerging policy issues and acknowledged with appreciation the cooperative actions undertaken by Strategic Approach stakeholders on these issues. Furthermore, the Conference encouraged further implementation of cooperative actions by all Strategic Approach stakeholders and also encouraged continued and enhanced risk reduction and information sharing efforts on emerging policy issues. The Conference stressed the need to foster coherent implementation of emerging policy issues;

In Resolution IV/2: Emerging policy issues, Part I E Endocrine-disrupting chemicals, the International Conference on Chemicals Management recognized the adverse effects on human health and the environment of endocrine-disrupting chemicals and also recognized the need to protect humans and ecosystems and their constituents parts that are especially vulnerable, as set forth in, *inter alia*, paragraph 14 (b) of the Overarching Policy Strategy.

Furthermore, the Conference invited the United Nations Environment and the World Health Organization to address the needs identified by developing countries and countries with economies in transition, subject to available resources, by generating and disseminating information on endocrine-disrupting chemicals, as part of the workplan set out in the progress report on endocrine disrupting chemicals prepared by the United Nations Environment Programme, the World Health Organization and the Organization for Economic Cooperation and Development¹.

The participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals, were invited to further develop and implement the plan of work for the cooperative actions set out in the progress report referred to in paragraph above² in an open, inclusive and transparent manner, and requests all interested stakeholders to support those efforts.

II. Planned activities for 2017 – 2020

In response to the invitation and request set out in resolution IV/2, the United Nations Environment, the World Health Organization and the Organization for Economic Cooperation and Development took the lead in further developing the plan, considering that the Conference encouraged further implementation of cooperative actions by all Strategic Approach stakeholders.

In further developing the workplan, the United Nations Environment, the World Health Organization and the Organization for Economic Cooperation and Development jointly requested for information on research, awareness raising, relevant legislation/regulation, capacity building/ training and other related activities on endocrine disrupting chemicals from SAICM stakeholders. The Strategic Approach stakeholders were invited to share the activities they were undertaking to address this emerging policy issue by completing a form. Information was received from several SAICM stakeholders including government, industry and non-governmental organizations and it has been collected, compiled and presented in

¹ SAICM/ICCM.4/INF/20, annex, sect. III.

² *Ibid.*

Annex II to this document. The EDCs workplan was prepared based on information provided and it is not a global comprehensive compilation of activities being undertaken by SAICM stakeholders.

The following table provides an update of the workplan presented to ICCM4³ and it includes a number of activities planned. It is important to note that the workplan should be seen as a living document and additional activities may well be undertaken in the medium, short, long term to 2020. The tables below were submitted to the 2nd Meeting of the ICCM5 Bureau - Sao Paulo, Brazil, 7 - 8 December 2016 and are planned to be updated during 2019.

Information on progress on Endocrine Disrupting Chemicals may be found in document SAICM/OEWG.3/6 - Emerging policy issues and other issues of concern. In addition to the information included in that document, the OECD is developing Test Guidelines, guidance documents and conceptual frameworks and strategies for identifying EDCs. In 2018, the OECD published the Revised Guidance Document 150 on Standardised Test Guidelines for Evaluating Chemicals for Endocrine Disruption. The document is intended to provide guidance for evaluating chemicals using standardised test guidelines. Specific objectives include providing a description of the OECD conceptual framework for evaluating chemicals for endocrine disruption, background on the standardised test methods used, and guidance for interpreting the outcome of individual tests. For details on OECD's work on EDCs, see <http://www.oecd.org/env/ehs/testing/oecdworkrelatedtoendocrinedisrupters.htm>

ACTIVITY AREAS	PLANNED ACTIONS
Provide up-to-date information and scientific expert advice to relevant stakeholders for the purpose of identifying or recommending potential measures that could contribute to reductions in exposures to or the effects of endocrine-disrupting chemicals, in particular among vulnerable populations, through, inter alia, timely updates to the 2012 report on the state of the science of endocrine-disrupting chemicals, published jointly by the United Nations Environment and the World Health Organization, with particular attention to the needs of developing countries and countries with economies in transition	WHO: WHO has embarked upon a new project on early life-stage avoidable environmental exposures, which includes EDCs, among others, and is a contribution to global work on Developmental Origins of Health and Disease. Following an expert meeting in June 2016, a range of activities are being implemented including publications in the scientific literature, training and information aimed at the health sector including medical professionals. OECD: Pursue development of Test Guidelines, in particular in areas not well covered for an efficient screening, e.g. <i>in vitro</i> methods for thyroid disruption; consolidation of existing Test Guidelines applying the Adverse Outcome Pathway concept to improve mechanistic understanding of responses and adverse effects measured; development of Test Guidelines covering biotransformation assays (i.e. prediction of metabolism) to place <i>in vitro</i> results in context. UN Environment: Compile and disseminate overview reports that focus on existing scientific knowledge of environmental exposure and impact, legislation, measures and gaps regarding known and selected

³ *Ibid.*

	potential EDCs (especially information from developing and transition countries) by 2017. The overview reports will have a period of commenting and will be made available at the UN Environment website. Available risk management options in reducing exposure such as safer substitution and non-chemical alternatives will be included in the reports. UN Environment will generate and disseminate situation and gap analysis reports on the state-of-the-art methodologies and tools that are ‘fit for purpose’ for assessing the environmental hazards and risks as well as the environmental exposure of EDCs by end of 2017. Two expert workshops are planned for 2017-2018. UN Environment /OECD/WHO: A SAICM project to improve baseline knowledge of impacts and policy for EDCs in developing countries will be implemented. Data on EDCs will be compiled, including global technical and scientific work, and country case studies. This activity is subject to funding approval.
Raise awareness and facilitate science-based information exchange, dissemination and networking on endocrine-disrupting chemicals through, inter alia, activities at all levels and the use of the Strategic Approach clearing house	UN Environment: Support the design of generic awareness raising materials and the rolling out of region-specific awareness raising campaigns by the end of 2017. WHO: Continue to provide the WHO Chemical Risk Assessment Network as a forum for scientific networking on the human health aspects of EDCs. Public health awareness-raising materials developed under the above-mentioned project on early life-stage exposures. OECD: publish case studies on Integrated Risk Assessment to learn on cross-species extrapolation of data in ENV Series on Testing and Assessment. UN Environment/OECD/WHO: facilitate exchange among SAICM stakeholders on current and planned EDC activities through periodic on-line consultations and other means⁴;
Provide international support for activities to build capacities in countries, in particular developing countries and countries with economies in transition, for generating information and for assessing issues related to endocrine-disrupting chemicals in order to	UN Environment/ WHO/ OECD: In the period until 2020, facilitate meetings, within the organizations’ respective workplans, to address specific issues on EDCs.

⁴ See Annex II.

support decision-making, including the prioritization of actions to reduce risks

Facilitate mutual support in research, the development of case studies and advice on translation of research results into control actions

UN Environment: Support selected developing and transition countries to draft project proposals on appropriate case studies (environmental assessment and management of EDCs) in collaboration with the Chemicals in Products project (such as pesticides and substances in textiles, children's products, building products, electrical and electronic products) by end of 2017.

WHO: Through actions outlined under 6 a, b and c, make recommendations relevant to human health research.

ANNEX II

Compilation of Stakeholders' Current and Planned Activities on Endocrine Disrupting Chemicals⁵

Country/Region/ Organization	Available and planned risk reduction and information sharing tools *	Available and planned best practice information *	Type of Activity/ Initiative (Research, awareness raising / legislation/ regulatory measures / capacity building, other)	Contact Person (Name, Organization, Contact details)	web-link
Barbados			Research/capacity building (development of analysis of EDCs in environmental samples)	Research/capacity building (development of analysis of EDCs in environmental samples)	
Belarus			Drafted in the sectoral scientific and technical program of the Ministry of Health of the Republic of Belarus "Environment and health preservation", aimed at restricting the use of phthalates in medical devices, food packaging, children's toys. Planned implementation period 2017-2020 years. Development of booklets "Endocrine disruptors and children's health" (distributed in antenatal health care), interviews and articles in the media	Ms. Halina Lisouskaya Senior Researcher of laboratory of preventive and environmental toxicology, SAICM National Focal Point Tel: (+375) 17 284 1382 Mobile: (+375) 297 626 079 Fax: (+375) 17 284 0345 E-mail: ptiza-igl@mail.ru Ms.Iryna Ilyukova Head of laboratory of preventive and environmental toxicology Tel: (+375) 17 292 60 27 E-mail: toxlab@mail.ru Fax: (+375) 17 284 03 45 Republican unitary	http://ng.sb.by/stati/article/khimichesk-iy-kokteyl.html

⁵ Inputs received presented in alphabetical order

				enterprise «Scientific practical centre of hygiene» of the Ministry of Health Street address: Akademicheskaya St., 8, 220012, Minsk, Republic of Belarus	
Canada	Petition 340 on Federal Research on hormone disrupting substances as required under the Canadian Environmental Protection Act 1999.	Information is provided about federal research activities on the effects of hormone disrupting substances including how Environment Canada and Health Canada use the research results for risk assessment and management; data collected on substances that are considered new under the Canadian Environmental Protection Act, 1999; budget allocated to research and the involvement of Canada in international research initiatives.	Research	Suzanne Leppinen, Director, Safe Environments Directorate, Healthy Environments and Consumer Products Safety Branch suzanne.leppinen@hc-sc.gc.ca or suzanne.leppinen@canada.ca	http://www.oag-bvg.gc.ca/internet/English/pet_340_e_37607.html
	Further development of an in vitro model of adipocyte development to screen for obesogens	Health Effects research; Results will be published: Not suitable for Clearinghouse	Research	Dr. Ella Atlas, Environmental Health Science and Research Bureau, Health Canada Ella.Atlas@canada.ca	
	Novel in vitro models for the study of endocrine disruptor effects on	Health Effects research; Results will be published:	Research	Dr. Ella Atlas, Environmental Health	

	breast cancer initiation and progression	Not suitable for Clearinghouse		Science and Research Bureau, Health Canada Ella.Atlas@canada.ca	
	Validation of methods for detecting thyroid disrupting chemicals	Validation of chemical screening method;	Research	Dr. Hongyan Dong (hongyan.dong@canada.ca) a) Dr. Mike Wade (mike.wade@canada.ca), Environmental Health Science and Research Bureau, Health Canada	
	Toxicity of flame retardants in house dust and of replacement plasticizers	Health Effects research; Results will be published: Not suitable for Clearinghouse	Research	Dr. Mike Wade, Environmental Health Science and Research Bureau, Health Canada Mike.Wade@canada.ca	
	Plastics and Personal-care Product use in Pregnancy (P4) Study	Biomonitoring and consumer product use information; Results will be published: Not suitable for Clearinghouse	Research	Dr. Tye Arbuckle, Environmental Health Science and Research Bureau, Health Canada Tye.Arbuckle@canada.ca	
	Maternal-Infant Research on Environmental Chemicals (MIREC) Platform	Biomonitoring and health effects; Results will be published: Not suitable for Clearinghouse	Research	Dr. Tye Arbuckle, Environmental Health Science and Research Bureau, Health Canada Tye.Arbuckle@canada.ca	
	Changes in deoxyribonucleic acid (DNA) methylation as a predictive mode of action for effects of low dose exposure to mixtures and endocrine disrupters	Mechanistic Toxicity and biomarker identification; Results will be published: Not suitable for Clearinghouse	Research	Dr. Daniel Desaulniers; Environmental Health Science and Research Bureau, Health Canada: Daniel.Desaulniers@canada.ca	

	Canadian House Dust Study: National survey of home dust content of metals and small molecule contaminants	Biomonitoring: This study has yielded nationally representative concentrations of a wide variety of compounds including many known or suspected endocrine disruptors. These results give a picture of typical urban exposures to endocrine disruptors in Canada. Results will be published: Not suitable for Clearinghouse	Research	Dr. Pat Rasmussen (Pat.Rasmussen@canada.ca) and Dr. Cariton.Kubwabo (Cariton.kubwabo@canada.ca), Environmental Health Science and Research Bureau, Health Canada	
	Evaluation of estrogenic and thyroid-disrupting activities of targeted CMP3 priority substances: Benzotriazole, Thiocarbamate, Hindered phenols and a brominated organophosphate flame retardants; to tadepoles in water and or sediments. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Stacey Robinson, Environment and Climate Change Canada, stacey.robinson@canada.ca (613) 990-9749	
	Using a multi-tiered screening approach and the avian adverse outcome pathway (AOP) framework to determine the effects of new and existing priority CMP3 substances, primarily organic flame retardants, on key neuroendocrine pathways. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Doug Crump, Environment and Climate Change Canada, doug.crump@canada.ca (613) 998-7383	

Environmental Transformation Processes and Bioaccumulation, Fate and Effects of CMP3 Priority Organic Flame Retardants in Avian Wildlife and Fish Within An Adverse Outcome Pathway (AOP) Framework. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Robert Letcher, Environment and Climate Change Canada, robert.letcher@canada.ca (613) 998-6696	
Exposure, Uptake and Adverse Effects on Birds exposed to New and Existing CMP3-Priority Organic Flame Retardants: identifying in vivo changes within an Avian Adverse Outcome Pathway. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Kim Fernie, Environment and Climate Change Canada, kim.fernier@canada.ca (905) 336-4843	
Atmospheric Fate Studies on CMP Priority Chemicals (Flame Retardants). Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Tom Harner, Environment and Climate Change Canada, tom.harner@canada.ca (416) 739-4837	
Source, Environmental Fate and Toxicity of Synthetic Musks in Canada. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Hayley Hung, Environment and Climate Change Canada, hayley.hung@canada.ca (416) 739-5944	
Chronic toxicity of thiocarbamate and benzothiazole compounds to survival, growth, and reproduction of freshwater invertebrates. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Adrienne Bartlette, Environment and Climate Change Canada, adrienne.bartlette@canada.ca (905) 336-6257	

Environmental Fate and Disposition of CMP III Priority Polar Organic Substances (benzotriazoles (BZTs), hindered phenols (HPs), and organophosphate flame retardants (OPEs)). Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Amila De Silva, Environment and Climate Change Canada, amila.desliva@canada.ca 905-336-4407	
Chronic toxicity and modes of action of benzotriazoles/benzothiazoles and flame retardants in aquatic organisms. Research project from 2016 to 2019.	Once results are published, this could be added to the SAICM Clearinghouse	Research	Magali Houde, Environment and Climate Change Canada, magali.houde@canada.ca 514-496-6774	
National environmental monitoring and surveillance of ambient air for select priority substances which some are also EDCs	Once results are published, this could be added to the SAICM Clearinghouse	Research	Jean-Pierre Charland, Environment and Climate Change Canada, jean-pierre.charland@canada.ca (613) 990-8560	
National environmental monitoring and surveillance of surface water for select priority substances which some are also potential EDCs	Once results are published, this could be added to the SAICM Clearinghouse	Research	Christine Garron, Environment and Climate Change Canada, christine.garron@canada.ca (902) 426-6317	
National environmental monitoring and surveillance of sediments for select priority substances which some are also potential EDCs	Once results are published, this could be added to the SAICM Clearinghouse	Research	Magella Pelletier, Environment and Climate Change Canada, magella.peletier@canada.ca (514) 283-6227	
National environmental monitoring and surveillance of aquatic biota for	Once results are published, this could be	Research	Daryl McGoldrick, Environment and Climate Change Canada,	

select priority substances which some are also potential EDCs	added to the SAICM Clearinghouse		daryl.mcgoldrick@canada.ca 905 336-4685	
National environmental monitoring and surveillance of bird eggs for select priority substances which some are also potential EDCs	Once results are published, this could be added to the SAICM Clearinghouse	Research	Pamela Martin, Environment and Climate Change Canada, pamela.martin2@canada.ca 905 336-4879	
National monitoring and surveillance of municipal wastewater treatment influent, effluent and biosolids, for select priority substances which some are also potential EDCs	Once results are published, this could be added to the SAICM Clearinghouse	Research	Shirley Anne Smyth, Environment and Climate Change Canada, shirleyanne.smyth@canada.ca (905) 336-4509	
Environmental monitoring and surveillance for select priority substances (ecosystem monitoring) which some are also potential EDCs in the Great Lakes basin	Once results are published, this could be added to the SAICM Clearinghouse	Research	Sean Backus, Environment and Climate Change Canada, sean.backus@canada.ca 905 336-4646	
Temporal Trends of Contaminants (including some are potential EDCs) in Arctic Seabirds Eggs (Project from 2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=1&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Birgit Braune, Environment and Climate Change Canada, birgit.braune@canada.ca 613-998-6694	
Metabolomics consequences of elevated PCB exposure in ringed seals (<i>Pusa hispida</i>) in Labrador: an expanded toxicological repertoire to characterize health impacts (Project from 2016-2017 under the Northern Contaminants Program)	would need to consult Jason Stow as well as the actual principal investigator in academia to determine if this should	Research	Jason Stow, Indigenous and Northern Affairs Canada, Jason.Stow@aadnc-aandc.gc.ca, 204-421-6476	

http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=31&toc=show	be included in the SAICM Clearinghouse			
Spatial and Long-term Trends in Persistent Organic Contaminants (including some potential EDCs) and Metals in Lake Trout and Burbot from the Northwest Territories (Project from 2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=11&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Marlene S. Evans, Environment and Climate Change Canada, marlene.evans@canada.ca 306-975-5310	
Northern Contaminants Air Monitoring: Organic Pollutant Measurement (including some potential EDCs) (Project from 2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=8&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Hayley Hung, Environment and Climate Change Canada, hayley.hung@canada.ca (416) 739-5944	
Passive Air Sampling Network for Organic Pollutants (including some potential EDCs) and Mercury (Project from 2013-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=17&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Hayley Hung, Environment and Climate Change Canada, hayley.hung@canada.ca (416) 739-5944	
Arctic Caribou Contaminant (including some potential EDCs) Monitoring Program (Project from	would need to consult Jason Stow as well as the actual principal	Research	Jason Stow, Indigenous and Northern Affairs Canada,	

2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=4&toc=show	investigator in academia to determine if this should be included in the SAICM Clearinghouse		Jason.Stow@aadnc-aandc.gc.ca, 204-421-6476	
Assessing Persistent Organic Pollutants (including some potential EDCs) in Canadian Arctic Air and Water as an Entry Point into the Arctic Food Chain (Project from 2016-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=34&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Liisa Jantunen, Environment and Climate Change Canada, liisa.jantunen@canada.ca 705-458-3318	
Temporal and Spatial Trends of Legacy and Emerging Organic (including some potential EDCs) and Metal/Element Contaminants in Canadian Polar Bears (project from 2012-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=10&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Robert Letcher, Environment and Climate Change Canada, robert.letcher@canada.ca (613) 998-6696	
Community Based Seawater Monitoring for Organic Contaminants (including some potential EDCs) and Mercury in the Canadian Arctic (project under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=25&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Derek Muir, Environment and Climate Change Canada, derek.muir@canada.ca 905-319-6921	

Temporal Trends of Persistent Organic Pollutants (including some potential EDCs) and Metals in Ringed Seals from the Canadian Arctic (project from 2012-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=13&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Derek Muir, Environment and Climate Change Canada, derek.muir@canada.ca 905-319-6921	
Temporal trends of persistent organic pollutants (including some potential EDCs) and mercury in landlocked char in high Arctic lakes (project from 2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=15&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research	Derek Muir, Environment and Climate Change Canada, derek.muir@canada.ca 905-319-6921	
Long Term Trends of Halogenated Organic Contaminants and Metals in Lake Trout from Two Yukon Lakes; Kusawa and Laberge (project from 2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=12&toc=show		Research	Jason Stow, Indigenous and Northern Affairs Canada, Jason.Stow@aadnc-aandc.gc.ca , 204-421-6476	
Temporal trends of mercury and halogenated organic compounds in Hendrickson Island and Sanikiluaq beluga (project under the Northern Contaminants Program)		Research	Jason Stow, Indigenous and Northern Affairs Canada, Jason.Stow@aadnc-	

http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=22&toc=show				aandc.gc.ca, 204-421-6476	
Temporal Trend Studies of Trace Metals and Halogenated Organic Contaminants (HOCs), Including New and Emerging Persistent Compounds, in Mackenzie River Burbot, Fort Good Hope, NWT (project from 2011-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=18&toc=show		Research		Jason Stow, Indigenous and Northern Affairs Canada, Jason.Stow@aadnc-aandc.gc.ca, 204-421-6476	
Glacier melt and soil/permafrost thaw inputs of mercury and emerging organic contaminants to a pristine high Arctic watershed in Quttinirpaaq National Park, northern Ellesmere Island, Nunavut (project from 2016-2017 under the Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=36&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research		Derek Muir, Environment and Climate Change Canada, derek.muir@canada.ca 905-319-6921	
Climate change, contaminants, ecotoxicology: interactions in Arctic seabirds at their southern range limits (project from Northern Contaminants Program) http://www.science.gc.ca/default.asp?lang=En&n=ED7D11AF-1&offset=32&toc=show	Once results are published, this could be added to the SAICM Clearinghouse	Research		Kim Fernie, Environment and Climate Change Canada, kim.fernier@canada.ca (905) 336-4843	

ChemSec - an NGO based in Sweden	We are the organization behind the SIN List, which is a list of substances which we believe (based on all available data) fulfill the EU REACH criteria of being substances of very high concern (SVHC). On the SIN List we have 32 substances identified as SVHCs only because of their endocrine disrupting properties. In the absence of any official EDCs criteria, this list of EDCs can be used by companies, investors, governments and more. Eg. this is one of the three list which UNEP bases its draft report identifying important EDCs on. The SINList in full is available on www.sinlist.chemsec.org, and the EDCs specifically are described in the following publication: http://chemsec.org/publication/endo-crine-disruptors,reach,sin-list/the-32-to-leave-behind-edcs-relevant-for-reach-2015/ If not already in there, I believe this should definitely be part of the SAICM clearinghouse.	We are currently in the phase of developing a new online tool for substitution. We call it an "e-bay chemicals" and it should be a place where companies can market or ask for alternatives to hazardous chemicals. A first version of this platform is planned for launch in early 2017.	Capacity building	Anna Lennquist: anna.lennquist@chemsec.org	chemsec.org
Center for International Environmental Law (CIEL)/ Switzerland/ Europe	(to be included in the SAICM Clearinghouse) Blog posts / Press releases: What's More Hazardous – Endocrine Disruptors or the EU's Proposed Criteria?; Endocrine Disrupting Chemicals; Economic Benefits of Tighter	(to be included in the SAICM Clearinghouse)	Awareness raising / legislation/ analysis of regulatory measures / capacity building / general social media outreach	Giulia Carlini, Center for International Environmental Law (CIEL) gcarlini@ciel.org	www.ciel.org

	Controls for Endocrine Disruptors Outweigh Hypothetical Trade Effects; WHO-UNEP Report on Endocrine Disruptors Highlights Need for Global Action; European Commission Continues to Ignore Parliament on TTIP; Breaking the Global Paralysis on Endocrine Disruptors. Reports: Driving Innovation: How Stronger Laws Help Bring Safer Chemicals to Market; Lowest Common Denominator: How the EU-US trade deal threatens to lower standards of protection from toxic pesticides; Human Rights Implications of Toxic Chemicals: DecaBDE; Human Rights Implications of Toxic Chemicals: Phthalates. Feedback to EU Commission Criteria to identify endocrine disruptors for plant protection products (COMMISSION REGULATION (EU) .../... setting out scientific criteria for the determination of endocrine disrupting properties and amending Annex II to Regulation Feedback to EU Commission Criteria to identify endocrine disruptors for biocidal products (COMMISSION DELEGATED				
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	REGULATION (EU) .../... setting out scientific criteria for the determination of endocrine-disrupting properties pursuant to Regulation (EU) No 5 Letter to EU Commission: Environmental, Labor, and Health Advocates Urge EU Commission to Confront Dangers of Endocrine Disrupting Chemicals; Legal reform capacity building workshop in the Asia Pacific Region; Legal reform capacity building workshop in the Africa Region (planned).				
Costa Rica, Universidad Nacional, Instituto Regional de Estudios en Sustancias Toxicas (IRET)	Pesticide manual with information about the pesticides classified as EDCs. Project with small vegetable farmers in pesticides reduction programme. Presentations about exposure, effects and risks of EDCs to members of the National Secretary of Chemical Substances.		Research, awareness raising, capacity building Investigation of the use of EDCs in agricultural pesticides, industrial, consumer, and personal care products; Environmental presence (surface, ground and drinking water) of agricultural pesticides classified as EDCs and other products using modern analytical instrumentation like Liquid chromatography with tandem mass spectrometry (LC-MSMS). Effect assessment of endocrine-disrupting in fish, other aquatic organism, and terrestrial organism. Exposure and effect assessment of endocrine-disrupting pesticide to agricultural workers in vegetable production, Exposure and effect assessment of endocrine-disrupting pesticide to	Clemens Ruepert, Instituto Regional de Estudios en Sustancias Toxicas (IRET) Universidad Nacional Apdo 86-3000 Campus Omar Dengo Heredia, COSTA RICA clemens.ruepert@una.ac.cr irect@una.cr	www.irect.una.ac.cr

			women and children living in banana plantation area.		
Costa Rica DIGECA/MINAE	Costa Rica is presently executing a PCB Integrated Management in Costa Rica Project for the elimination of existing contaminated equipment and oils. In the second semester of 2016 a total of 100 MT of PCB contaminated oils and equipment will be destroyed along with approximately 10 MT of obsolete pesticides of which DDT is included.	A Technical Guideline for PCB Management has been published and is on line at http://www.digeca.go.cr/documentos/guia-tecnica-para-la-gestion-de-pcb .	A PCB Regulation has been formulated and technically approved by the Ministry of Health and is in the process of being signed by the MINAE and Ministry of Health.	Shirley Soto , Director, Environmental Quality Management Division, Ministry of Environment and Energy. E-mail: ssoto@minae.go.cr	www.digeca.go.cr
EU/WECF			Nesting Programme: Awareness raising programme about toxic chemicals in children`s products addressing everybody who works and lives with children: website, mobile phone App, workshops	Alexandra Caterbow, WECEF, alexandra.caterbow@wecf.eu	www.nestbau.info ; www.projetnesting.fr ; www.eenveilignest.nl ; www.projectnesting.org
			EDCs exhibition in English and German		
			EDCs information brochure for consumers in English, German, French: http://www.wecf.eu/english/publications/2013/guide_edcs.php		
			Baby care products guide in English, German, French, Dutch: http://www.wecf.eu/english/publications/2014/baby-care-guide.php		
			Personal care guide in English, German, French, Dutch: http://www.wecf.eu/english/publications/2014/baby-care-guide.php		

			Toys guide in English, German, French, Dutch, Chinese, Serbian, Greek, Macedonian, Estonian : http://www.wecf.eu/english/publications/2009/publications-toysguide.php		
			WECF report on chemicals in textiles: http://www.wecf.eu/english/publications/2013/WECFfullreporttextiles.php		
			WECF/BEF Handbook for hairdressers: Hazardous ingredients in Professional Cosmetics: http://www.wecf.eu/english/publications/2014/handbook-hairdressers.php		
			WECF/BEF Handbook for teachers: Think Before You Buy: Choose Products With Less Hazardous Substances: http://www.wecf.eu/english/publications/2015/teachers-handbook.php		
			WECF publication: Linking breast cancer and our environment (in English, Dutch, German, French): http://www.wecf.eu/english/publications/2007/breastcancer_environment.php		
			WECF publication about women and EDCs (Gestörte Weiblichkeit / Menace sur la santé des femmes) in French and German: http://www.wecf.eu/english/publications/2012/wecf-france-EDCs.php		
International Council of Chemical Associations	ICCA's Long-Range Research Initiative (LRI), through the LRI programs at ACC, Cefic and JCIA, contributed significantly to the laboratory studies needed for the development and validation of a number of the screening test		Research	Anne Kolton, American Chemistry Council, anne_kolton@americanchemistry.com	https://www.icca-chem.org/wp-content/uploads/2015/08/Long-Range-Research-Initiative-Advancing-

	guidelines that have been adopted by OECD and EPA. In addition, LRI is developing 21st century in vitro biological pathway approaches (consistent with the vision of US National Academy of Sciences' Toxicity Testing in the 21st Century) to prioritize and conduct risk based screening and risk evaluations that can be used in lieu of the time-and animal intensive time-intensive techniques that have traditionally been used. Scientists from many industrial sectors continue to provide significant contributions to the field, through publications in the scientific literature, focused on the evaluation and optimization of screens, including High Throughput (HTP) tools and omics, to identify substances that have the potential to interact with the endocrine system (“endocrine-active”) and tests to determine if such substances can cause adverse effects due to that interaction, including dose-response.				Chemical-Safety-Assessment-for-the-21st-Century.pdf http://cefic-lri.org/tag_projects/endocrine-disruption/?post_type=projects http://cefic-lri.org/tag_projects/endocrine-disruption/?post_type=projects https://lri-abstract.americanchemistry.com/LRIAbstracts.aspx https://translate.google.com/translate?hl=en&sl=ja&u=http://www.j-lri.org/&prev=search
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The June 2012 ICCA LRI Workshop held in Japan included a pre-workshop training course entitled "The Endocrine System: Global Perspectives on Testing Methods and Evaluation of Endocrine Activity." In addition, the three-day Environmental Toxicological Risk Assessment Workshop held at The Laico Regency Hotel, Nairobi, Kenya on June 21-23 2016, which was partially funded by a grant from the Chemistry Education Foundation, included one day focused on Endocrine Disrupting Chemicals.		Awareness raising, Capacity building	Anne Kolton, American Chemistry Council, anne_kolton@americanchemistry.com	
As part of current government programs like the U.S. EPA's Endocrine Disruptor Screening Program (EDSP), industry has generated significant amounts of data on chemicals subject to the EDSP for use by regulators to determine whether their chemicals are endocrine active, and if so, whether they cause adverse effects due to that interaction, and dose-response, for use in risk-based decision making.		Research	Anne Kolton, American Chemistry Council, anne_kolton@americanchemistry.com	
ICCA provides support to its member associations around the world through various capacity building activities. Most recently,		Capacity Building, Awareness Raising	Anne Kolton, American Chemistry Council, anne_kolton@americanchemistry.com	https://www.icca-chem.org/wp-content/uploads/2015/08/Long-

	ICCA has conducted a series of webinars with industry associations to enhance the understanding of the EDCs issues at policy and technical levels.				Range-Research-Initiative-Advancing-Chemical-Safety-Assessment-for-the-21st-Century.pdf
Indonesia/National/Indonesia Water Community of Practice (IndoWater CoP)			Research: (1) Estrogenic compound analysis on Surabaya river sediment and It's Impact to Asian Red-tailed Catfish Intersexuality, (2) Activity and Livelihood Analysis (AA and LA) on EDCs contaminated river (Kampar, Brantas, and Ciliwung), (3) Measuring EDCs compounds (plastic and herbicide) on water resources in members working area (Kampar, Ciliwung, and Brantas); (4) Mapping EDCs case in Indonesia from different journals. The second to fourth are on going process	Riska Darmawanti (National Coordinator); email: indowatercop@gmail.com ; cellphone: +62-8125-2031-456	
Indonesia/National/Indonesia Water Community of Practice (IndoWater CoP)			Research: (1) Estrogenic compound analysis on Surabaya river sediment and It's Impact to Asian Red-tailed Catfish Intersexuality, (2) Activity and Livelihood Analysis (AA and LA) on EDCs contaminated river (Kampar, Brantas, and Ciliwung), (3) Measuring EDCs compounds (plastic and herbicide) on water resources in members working area (Kampar, Ciliwung, and Brantas); (4) Mapping EDCs case in Indonesia from different journals. The second to fourth are on-going process	Riska Darmawanti (National Coordinator); email: indowatercop@gmail.com ; cellphone: +62-8125-2031-456	
			Capacity Building: (1) Increasing members knowledge on EDCs and it is impact to human health, and livelihood; (2) Building women group and increasing their lobby and advocacy in EDCs (both activities is on-going process)		

			Increasing public awareness on EDCs contamination: making brochure on EDCs contamination		
			Indonesia Water Community of Practice is a consortium of NGO which working on river conservation with main focus on water quality problems. We see that in Indonesia, the water quality isn't being managed properly and seriously, particularly about EDCs contaminant. Many of EDCs are not included in the national regulation. Our focus for the next 5 years would be putting one of EDCs contaminant, for example plastic (such as phthalate esters, BPA) as main water quality standard. We're hoping to build more network to gain experience, consultancy, knowledge on EDCs in the near future.		
IPEN global			IPEN EDC guide English: http://www.ipen.org/sites/default/files/documents/ipen-intro-edc-v1_9a-en-web.pdf	Bjorn Beeler, IPEN, BjornBeeler@ipen.org	www.ipen.org
			IPEN EDC guide Spanish: http://www.ipen.org/sites/default/files/documents/Intro_to_EDCs_ES_June_2016.pdf		
			IPEN EDC guide Arabic: http://www.ipen.org/sites/default/files/documents/ipen-intro-edc-AR.pdf		
			IPEN EDC guide French: http://www.ipen.org/sites/default/files/documents/ipen-intro-edc-v1_9e-fr.pdf		

			IPEN EDC guide Russian: http://www.ipen.org/sites/default/files/documents/ipen-intro-edc-v1_9d-ru-web.pdf		
			IPEN / Arnika report about Dioxin in China: POPs in Chicken Eggs from Hotspots in China: http://ipen.org/news/high-levels-dioxins-found-chicken-eggs-sampled-near-waste-incinerators-and-metallurgical-plant		
			IPEN event on contaminated sites at INC7: http://ipen.org/news/mercury-contaminated-sites-side-event-inc7		
			IPEN / Arnika report on BRFs in products: Toxic Toy or Toxic Waste: Recycling POPs into New Products, http://ipen.org/news/toxic-toy-or-toxic-waste-recycling-pops-new-products		
			TEDx: scientific reviews of several EDCs and maintenance of a list of potential EDCs on the TEDX website. The research is published in peer-reviewed scientific journals and other information is available on TEDX website at www.tedx.org .	Carol Kwiatkowski, PhD, Executive Director TEDX, carolkw@tds.net	www.tedx.org
IPEN Africa			IPEN workshop about lead in paint in Africa: http://ipen.org/news/governments-agree-set-legal-limits-lead-paint-africa		
IPEN: Armenia/EECCA/ Armenian Women for Health and Healthy Environment (AWHHE) NGO	The project produced information materials (leaflets and brochures) in Armenian language using the materials by international organizations and NGO networks, the electronic versions are available on AWHHE website	AWHHE conducted sampling analysis of breast-milk for residual concentrations of DDT and its metabolites, HCCH and its isomers, as well as for 2,4-D pesticide. The results were compared with a similar	AWHHE is currently implementing the following EDCs related project: Project name: Protecting Women from Endocrine Disrupting Chemicals (June 2015 – June 2017, ongoing) Goal: Contribute to protecting women's health from endocrine disrupting chemicals in EECCA region.	Dr. Elena Manvelyan, President, Armenian Women for Health and Healthy Environment (AWHHE) NGO; email: office@awhhe.am ; tel.: +37410523604; website: www.awhhe.am ; address: 24 B Baghramyan	http://awhhe.am/protecting-women-from-endocrine-disrupting-chemicals/

		research by AWHHE in 2004. A significant decrease was noted (by 3 times) of the residues of DDT and HCCH and the metabolites from 0.09 mg/kg lipid to 1.01 mg/kg lipid. This decrease is largely due to AWHHE's long-term public education efforts related to pesticides usage in agriculture. However, an alarming sign was that 2,4-D (dichlorophenoxyacetic acid) was detected (up to 0.02 mg/kg lipid) in breast-milk for the first time. Information was shared through HEAL, WECF, IPEN networks		Avenue, Yerevan 0019, Armenia	
			Objective 1: Strengthen the national and regional outreach and communication regarding the EDCs as part of the SAICM process in coordination with IPEN EECCA Hub (Eco-Accord)		
			Objective 2: Promote civil society discussions on the impact of EDCs on women's health in Armenia and EECCA region)		
IPEN Armenia/ EECCA/ Armenian Women for Health and Healthy Environment	The project is still under implementation, the information will be available on the IPEN and AWHHE websites shortly.	IPEN is providing support to AWHHE to conduct a survey the brands of solvent-based paint sold for non-industrial use,	Project name: Lead Paint Study in Armenia as part of IPEN's Lead Paint Elimination Campaign (April-September 2016)	Dr. Elena Manvelyan, President, Armenian Women for Health and Healthy Environment (AWHHE) NGO; email:	http://www.ipen.org/projects/eliminating-lead-paint

(AWHHE) NGO in cooperation with IPEN		prepare an overview of the results; prepare a survey of existing national laws, regulations, standards (voluntary or mandatory), and/or frameworks that might currently apply to the lead content of paints for sale and/or use in country; identify any relevant legal frameworks in force in Armenia; provide an overview of the paint industry in Armenia; collaborate with the IPEN Lead Paint Team to prepare and release a national report and reach out to various stakeholders, including paint industry leaders with the paint study results.		office@awhhe.am; tel.: +37410523604; website: www.awhhe.am; address: 24 B Baghramyan Avenue, Yerevan 0019, Armenia	
IPEN China/global			IPEN /Insight Explorer report: Lead in Enamel Decorative Paints in China, http://ipen.org/news/new-study-finds-lead-levels-majority-paints-exceed-chinese-regulation-and-should-not-be-store		
IPEN Malaysia/global			IPEN / Consumers' Association of Penang report: Lead in New Enamel Household Paints in Malaysia: http://ipen.org/news/high-lead-levels-found-majority-malaysian-paint-brands		
IPEN India			EDCs Conference 2016, organized by Toxics Link, India	info@toxicslink.org	www.toxicslink.org

			Toxics link BPA report: http://www.ipen.org/news/toxics-link-release-new-report-bisphenol-baby-feeding-bottles-india		
			Toxics Link Triclosan Report: http://www.ipen.org/news/new-toxics-link-report-disrupting-triclosan-potential-endocrine-disrupting-chemical-found		
			Toxics Link ECDs and personal care products: http://toxicslink.org/docs/Endocrine-Disruptive-Chemicals-REPORT-2016.pdf		
IPEN Taiwan/global			IPEN / Taiwan Watch Institute report: Lead in Solvent-Based Paints for Home Use in Taiwan. http://ipen.org/news/press-release-high-lead-levels-found-majority-taiwan-paint-brands		
IPEN USA/North America/ Sciencecorps	Tox analysis including ED properties of chemicals in uniform fabric- with journal pub and outreach via unions planned.	Planned: recommendations on screening & textile standards, response to complaints, surveillance, & communication	Research, outreach, capacity building, worker and public protection	Dr. Kathleen Burns, Director, Sciencecorps, Newbury, MA, USA; Judith Anderson, AFA/AFL-CIO, Seattle WA, USA	www.sciencecorps.org * Link to information will be available for inclusion in Clearinghouse in October
	Public information resource on chemical analysis & tox/ED for legacy-banned organochlorine pesticides in food.	Planned: public information resource on screening, options to avoid exposure	Research, outreach, capacity building, regulatory measures	Dr. Kathleen Burns, Director, Sciencecorps, Newbury, MA, USA; Judy Braiman, Pres. Empire State Consumer Project, Rochester NY.	www.sciencecorps.org * Link to information will be available for inclusion in Clearinghouse in October
	Planned: Technical and public access information on tox/ED of	Planned: screening options and alternatives	Research, outreach, capacity building, regulatory measures	Dr. Kathleen Burns, Director, Sciencecorps,	www.sciencecorps.org * Link to information will be available for

	petroleum hydrocarbons (crude oil, gasoline, diesel, etc.)			Newbury, MA, USA (formerly Lexington MA)	inclusion in Clearinghouse in December
Italy: Istituto Superiore di Sanità (ISS) – National Institute of Health	Decalogue for the Citizens on EDCs, a dissemination tools (see web-link)	Contribution to the development of EU criteria for EDCs identification	National project on EDCs: translation of research into regulation and awareness	Alberto Mantovani, ISS, alberto.mantovani@iss.it	http://www.iss.it/ite
	Implementation of the substitution principle for EDCs present in consumer products	Contribution to the development of in vitro strategies for EDCs	EU LIFE project EDESIA (Endocrine Disruptors in silico/in vitro Evaluation and Substitution for Industrial Application)	Alberto Mantovani, ISS, alberto.mantovani@iss.it, Stefano Lorenzetti, ISS, Stefano.lorenzetti@iss.it, Life.edesia@iss.it	http://www.iss.it/life
	Implementation of biomonitoring surveillance for EDCs	Contribution to the development of biomonitoring best practices for EDCs	EU LIFE project PERSUADED (Phthalates and bisphenol biomonitoring in Italian mother-child pairs: link between exposure and juvenile diseases)	Cinzia La Rocca, ISS, Cinzia.larocca@iss.it, Francesca Maranghi, ISS, francesca.maranghi@iss.it	http://www.iss.it/lifp
	Screening activity for setting up priority list and criteria for definition	Plan of evaluation according to priority criteria (Roadmap for 2020)	ED Working Group – ECHA, ED identification for biocide legislation (BPR) 528/2012	maristella.rubbiani@iss.it	
	Implementation of biomonitoring surveillance for contaminants, including EDCs, in farm animals and their products	Development of the ISS patent “(Bio)Sensors’ system in Food Safety [BEST]”	Project ALERT (funded by the Italian Ministry for Economic Development)	Chiara Frazzoli, Chiara.frazzoli@iss.it	http://www.alert2015.it
Japan/Ministry of Health, Labor and Welfare	-	-	【 Research etc. 】 MHLW has been developing the screening methodologies of endocrine disrupting effects of chemicals focusing on their hormonal activities. Some of the results have contributed to	Office of Chemical Safety, Pharmaceutical Evaluation Division, Pharmaceutical Safety and Environmental Health Bureau, Ministry of Health, Labor and	

			international activities such as drafting of OECD activities.	Welfare, Japan E-mail: chemicalkatei@mhlw.go.jp	
Japan/Ministry of Economy, Trade and Industry, Japan (METIJ)	-	-	【 Research etc. 】 METIJ has been developing the effective, low cost type of screening test methods for EDCs, which can be easily used by companies, from the standpoint of supporting industrial activities. METIJ has been trying to make such test methods into OECD Test Guidelines for the global standardization.	Chemical Management Policy Division, Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry, Japan. Email: iguchi-naoki@meti.go.jp	
Japan/Ministry of the Environment, Japan (MOEJ)	-	-	【 Research etc. 】 MOEJ has been promoting its program focusing on testing and assessment of endocrine disrupting effects of chemicals to organisms in the environment. Reviewing the achievements of the preceding program (EXTEND2010), MOEJ released its new program titled as EXTEND2016 in June 2016.	Environmental Health and Safety Division, Environmental Health Department, Ministry of the Environment, Japan. E-mail: netsu@env.go.jp	
Mali			Exercice pratique de détection d'éventuels produits phytosanitaires dangereux, notamment du groupe des perturbateurs endocriniens en usage dans le périmètre de Samanko, par Dr Oumar Diaouré CISSE. Sous la houlette de l'Expert, les participants ont passé en revue une liste de 52 pesticides classés comme étant des perturbateurs endocriniens et vérifié l'existence de ces produits dans l'arsenal phytosanitaire de la coopérative.	Dr Oumar Diaouré CISSE, Expert en Développement et Gestion des Produits Chimiques et Déchets Point Focal SAICM/ Mercure DNACPN/ MEADD Bamako, Mali Tél: +223 20292410 +223 76473520 +223 44245123	

			L'exercice a permis de détecter l'usage du Lambda-cyhalothrin, incriminé dans cette liste.	Email : oumar.cisse@graduateinstitute.ch	
Monaco	not applicable	not applicable	not applicable		
Montenegro/Ministry for Sustainable Development and Tourism	Endocrine Disrupting Chemicals are considered in Montenegrin legislation, precisely the Law on chemicals and Rulebook on list of substances of very high concern (OJ MNE, 65/15) which transposed the REACH regulation and endocrine disrupting chemicals are considered as substances of very high concern.		Regulatory measures	Jelena Kovacevic, Ministry for Sustainable development and Tourism, jelena.kovacevic@mrt.gov.me	www.mrt.gov.me
PAN Asia Pacific	PANAP and its partner organizations are continuously monitoring the presence, use and health effects of HHPs/EDCs in plantation communities through the Community Pesticide Action Monitoring (CPAM) program. Skills building in the use of the CPAM App, identification of symptoms of pesticide poisoning; as well as information, education and communications campaign to raise awareness on the dangers of these chemicals are ongoing. IEC has been done through the publication of reports on conditions of paraquat, endosulfan and chlorpyrifos use in the Asia Pacific, panel of experts presentations, educational workshops, speaking tour with scientist expert on	The International People's Agroecology Multiversity Learning Portal with links to the PANAP ebooks and other info like videos on home composting, etc. http://ipamglobal.org/field-learning-sites/pan-asia-pacific-panap (1) Realize, Resist, Reclaim http://www.panap.net/sites/default/files/Realise-Resist-Reclaim.pdf (2) Replacing Chemicals with Biology: Phasing out highly hazardous pesticides with agroecology https://www.panna.org/sites/default/files/Phasing-Out-HHPs-with-	(1) Participation to the UN Convention on the Rights of the Child General Discussion Day on September 23, 2016. The hazards of pesticides and the case studies on Bhopal tragedy, Kasargod endosulfan tragedy, Kamukhaan Village and the death of Silvino Talavera due to pesticide exposure, and the failure of regulation are highlighted in the submission sent last July 28, 2016 (2) Lobbying for Asia Pacific States to require a pesticide buffer zone in schools (3) Participation in the Monsanto tribunal in October 14-16, 2016 (4) Participation in the 12th meeting of the POP Review Committee in September 19-23, 2016 (5) Research on glyphosate to be published soon (6) Research on children's exposure to pesticides/case studies (7) Support to PAN AP partners' fight to ban aerial spraying (8) The International People's Agroecology Multi-university learning platform development (8) Continuous giving of seminar-	Sarojeni Rengam sarojeni.rengam@panap.net et Deeppa Ravindran deeppa.ravindran@panap.net	http://www.panap.net/

	endocrine disruptors and children, and workshops on pesticide health risk assessment. PAN AP through its member NGOs is also tracking illegal pesticides trade, and is continuously lobbying for the aerial spray ban. PAN AP will be releasing soon a book on the dangers of glyphosate. Reports on the current CPAM is in the writing stage.	Agroecology.pdf (3) Banner for the Protect Our Children from Pesticides http://www.panap.net/sites/default/files/Protect-Children-Banner.pdf (4) Eliminating HHPs for Harm Prevention http://www.panap.net/sites/default/files/EDC-Banner.jpg (5) Agroecology: Forging the way to a secure future http://www.panap.net/sites/default/files/Agro-Ecology-Banner.jpg	workshops on pesticides and alternatives and capacity building upon request of partners		
PAN Europe/Belgium	PAN Europe and PAN members develop tools to raise awareness on the harmful effects of endocrine disrupting (ED) pesticides as well as to influence politicians to regulate ED pesticides and protect Europeans and the environment from exposure to EDCs. We currently work on the development of the scientific criteria by the European Commission and we also follow the authorization process of ED and hazardous pesticides. Tools: (a) website dedicated on disrupting food (http://www.disruptingfood.info/en/) consumer guide, (b) database on ED-pesticides (and impact assessment according to COM's options <a cons-guide"="" en="" href="http://www.pan-</p></td><td><p>(a) Consumer guide for EDCs and leaflet: (http://www.disruptingfood.info/en/cons-guide); (b) Reports and Database : (http://www.pan-europe.info/resources/reports), Scientific Opinions on EDCs, Impact Assessment on ED pesticides and database, Downfall of ED-policy in the EU	Scientific Research on pesticides that are EDCs, participation in Stakeholder Meetings with EC and EFSA, European Parliament meetings, public awareness through press releases, communication with politicians and institutions through letters and meetings. Organizing: parliamentary meetings based on science and European policies, capacity building meetings, conferences in European countries organized by our members	Dr. Angeliki Lyssimachou: angeliki@pan-europe.info and Hans Muillerman: hans@pan-europe.info	http://www.pan-europe.info	

	europe.info/resources/reports) (c) Communication Open letters (http://www.pan-europe.info/resources/other) (d) press releases (http://www.pan-europe.info/media/press-releases) as well as leaflets, reports, email list with member EU NGOs, EDC-coalition with other NGOs				
PAN Germany	PAN Germany is active to raise public awareness on alternatives and to influence decision makers to regulate ED pesticides and biocides aimed to protect citizens and the environment from exposure to EDCs. (a) Publication of the periodically revised "List of Highly Hazardous Pesticides" on behalf of PAN International: http://www.pan-germany.org/gbr/project_work/highly_hazardous_pesticides.html; (b) Information on ED-biocides: "Endocrine disrupting biocides - Why highly hazardous biocides must be phased out": http://www.pan-germany.org/download/biocides/ED-Biocides_backgroundpaper_PAN-Germany_F.pdf;	(a) Consumer guide and leaflet for EDCs (in German): http://www.pan-germany.org/download/ED_Pestizide.pdf; http://www.pan-germany.org/download/EDCs_german_web.pdf; (b) Field guides on non-chemical pest management in the tropics: http://www.oisat.org/fulltext_docs.php?category=field_guides&pos=0&what=content&order=0; (c) Information on sustainable use / alternatives of biocidal products (pesticides, not used in plant protection): http://www.pan-germany.org/deu/projekte/biozide.html	Awareness raising of the public and other stakeholder (information materials, website, social media) Capacity building activities (in cooperation with other PAN member organization/EDC-NGO coalition partner); Stakeholder activities: currently work on the development of scientific criteria for the identification of EDCs by the European Commission (and regulated by the EU legislations on pesticides and biocides (EC/1107/2009, EC/528/2012)).	susanne.smolka@pan-germany.org; susan.haffmans@pan-germany.org	http://www.pan-germany.org
Panama	Nothing yet	Nothing yet	Research in Prevalence study in process	Maria Ines ESQUIVEL	

Serbia/ Balkans/ Ministry of Agriculture and Environmental Protection	Available information sharing tools: official internet presentations of CA: 1. www.eko.minpolj.gov.rs (for different stakeholders with other relevant topics); 2. www.ipohem.gov.rs The web site is intended for informing consumers (still under preparation - Serbian/English version).	Campaign “FIGHT TO KNOW!”: - testing of an exercise of rights on being informed about the contents of SVHC (in this case for phtalates) in consumers' products through communication between consumers and producers/importers/distri buters; - laboratory analysis of phtalates in samples of selected articles.	Research	Sonja Roglic/ Ministry of Agriculture and Environmental Protection/email: sonja.roglic@eko.minpolj.gov.rs ; Tel: +381 11 7155 203	http://www.eko.minpolj.gov.rs/orgанизacija/sektori/sektor-za-planiranje-i-upravljanje-u-zivotnoj-sredini/odeljenje-za-hemikalije/informativni-pult-za-hemikalije-i-biocidne-proizvode/potrosaci/
		Campaign “FIGHT TO KNOW!”: - preparation and distribution of brochure "Stop EDCs in everyday products" (how to avoid exposure to hormone disrupting chemicals in daily life) as well as of brochure “Guidance for purchase of chemically safe products” (SVHC in products and consumers' right to be informed); - communication with consumers during the World Consumer Rights Day. Consumers had opportunity to get closer instructions on how to exercise their right to be	Awareness raising		http://www.eko.minpolj.gov.rs/orgанизacija/sektori/sektor-za-planiranje-i-upravljanje-u-zivotnoj-sredini/odeljenje-za-hemikalije/informativni-pult-za-hemikalije-i-biocidne-proizvode/potrosaci/brosure-i-materijali/ http://www.eko.minpolj.gov.rs/dokumenti/ http://www.eko.minpolj.gov.rs/

		informed (Article 33 of the REACH Regulation), brochures and model letter of request for information about presence of SVHC in products; - awareness raising of producers/importers/distributors of articles on SVHC through letter of request for information; - press releases and conferences; - hosting in radio and TV programmes; - publication of information on web site and via social networks.			npolj.gov.rs/wp-content/uploads/he-mikalije/Izvestaj%20o%20kampanji_Final-EN.pdf
		Law on Chemicals is harmonized with provisions of the REACH Regulation 1907/2006 except the centralized procedures (registration, evaluation and authorization). Most of the provisions in the Law on Chemicals were developed in order to harmonize national legislation with REACH Regulation (e.g. Article 33 as well as Article 123). Furthermore, in order to ensure risk control and	Legislation		

		replacement of certain substance with suitable safer alternative substances, Ministry in charge of environmental protection took over substances from Authorization List, and published List of Substances of Very High Concern, in the “Official Gazette of the RS”, number 94/13, as well as substances from Candidate List, and published List of Candidate Substances for List of Substances of Very High Concern in the “Official Gazette of the RS”, number 58/16. According to the provisions of the national legislation manufacturers, importers and downstream users of SVHC (from the List of SVHC) or mixtures containing them have the obligation to submit additional data for the purpose of entering these chemicals into the Chemicals registry. Thus, on request by consumer any supplier of an article containing SVHC in a		
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		concentration above 0,1% weight by weight (w/w) shall provide the consumer with sufficient information to allow safe use of the article including, as a minimum, the name of that substance.		
		Extraordinary enforcement activities of the competent authorities will be conducted regarding the campaign results (via sanitary and environmental inspectors).	Regulatory measures	
		Capacity building and strengthening collaboration between relevant state authorities (ministries responsible for environmental protection, health and protection of consumers in particular), NGO sector, consumer protection and trade organizations, media, health professionals and consumers in order to create conditions for safe chemicals management, with specific view to SVHC contained in products.	Capacity building	
		In order to increase		

		understanding of chemicals safety management, in particular on chemicals in articles, Satellite Symposium on “Endocrine Disrupting Chemicals (EDCs) and Women’s Health” was organized within the 2nd International Symposium on Advances in polycystic ovary. syndrome (PCOS) and Women’s Health. The Symposium was oriented towards endocrinologists, gynecologists, cardiologists, internal medicine specialists and other interested parties. This Symposium brought together representatives of government, civil society and health professionals in order to exchange existing experiences and to become an important partner in reaching to the general public and spreading information regarding harmful chemicals as well as harmful chemicals in products placed on the Serbian market.		
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	Planned: further activities regarding SVHC in articles through the future projects.				
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4. Environmentally persistent pharmaceutical pollutants (EPPPs): plan of work (led by UNEP, WHO, OECD, para 6 section III of resolution IV/2) and report on cooperative actions (para 8 section III of resolution IV/2)

In resolution IV/2: Emerging policy issues, Part III on Environmentally Persistent Pharmaceutical Pollutants, the International Conference on Chemicals Management invited relevant participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) within their respective mandates as part of their programmes of work to lead and facilitate cooperative action and to develop a plan of work on environmentally persistent pharmaceutical pollutants in an open, transparent and inclusive manner. The participating organizations of the IOMC discussed how to proceed and decided to follow the same approach as for the development of the work plan for Endocrine Disrupting Chemicals. The process entails completing a form to respond to activity areas as set out in ICCM-4 resolution IV/2 part III, para 4, 5 and 7 starting with IOMC organizations and other intergovernmental organizations working on this emerging policy issue, followed by an invitation to the Strategic Approach stakeholders and through them to their networks. The format to compile information includes activities (research, awareness, legislation, regulatory measures, capacity building), best practices, available tools, contact persons, and web link if available. Information received will be collected, compiled and presented to the ICCM Bureau through the Strategic Approach Secretariat during 2019.

Additional information on progress on Environmentally Persistent Pharmaceutical Pollutants may be found in document SAICM/OEWG.3/6 - Emerging policy issues and other issues of concern. In addition to the information included in that document, in February 2018 the OECD organised a Workshop on Managing Contaminants of Emerging Concern in Surface Waters, focusing on pharmaceuticals. Following the outcome of this workshop, the OECD is developing a report with policy responses to manage Contaminants of emerging concern in freshwaters, focusing on pharmaceuticals. This report is scheduled to be published at the beginning of 2019.

5. Highly hazardous pesticides (HHPs): modalities for cooperation and report on implementation of the HHP strategy (led by FAO, UNEP and WHO, (para 3 of resolution IV/3))

Global level cooperation on the HHP strategy

- (a) Countries taking action on HHPs have been guided by the FAO Pesticide Registration Toolkit (www.fao.org/pesticide-registration-toolkit/tool/home/) and specific guidelines developed jointly by FAO and WHO for this purpose (FAO/WHO Guidelines on Highly Hazardous Pesticides). The content of the Toolkit is continuously updated by FAO and WHO to provide ongoing guidance to pesticide registrars on risk assessment and management of HHPs.
- (b) FAO is facilitating a fruitful, hands-on collaboration between national and international organisations, academia and civil society with the aim to build capacity and dialogue among countries, and to move from local to global action on HHPs. FAO organized a webinar on HHPs on 12 November 2018 together with SAICM Secretariat.
- (c) The WHO Recommended Classification of Pesticides by Hazard continues to be an essential tool for enabling countries to identify HHPs. This publication is one of the key criteria for identifying HHPs as defined by the FAO/WHO Joint Meeting on Pesticides Management. It is under revision and an updated version is expected to be published early in 2019.

Regional level activities to address activities

- (a) A strong political will to mitigate impact on HHPs has been built in Africa, Asia and the Pacific. A significant step forward on the regional strategies has been made to set out key objectives, elements and expected benefits in three large regional consultations held in 2018. Regional HHP strategies have been elaborated for the East African Community (EAC), Southern African Community (SADC) through the Southern African Pesticide Regulators' Forum (SAPReF) and in the Pacific Islands.
- (b) FAO has also worked at mainstreaming the HHPs issue into regional programmes for food security in Asia and Africa to ensure that sound chemical management is an integral part of sustainable agriculture intensification. In the reporting period, FAO has availed catalytic and complementary resources for its Technical Cooperation Programme (TCP) to address HHPs. Additional resources for the African, Caribbean and Pacific (ACP) countries are expected to be made available by the European Union in 2019 as part of its programme on Multilateral Environmental Agreements, namely ACP MEAs Phase 3. This programme will ensure continuity of action on HHPs with the previous phases and facilitate the phase out of products posing the highest risk to the environmental and human health in six focus countries. Best national models will be disseminated at the regional level to scale-up phase-out strategies.

Country level activities in addressing HHPs

- (a) Countries in Africa, Asia and the Pacific continue to make significant progress in identifying HHPs, assessing their risks under the actual condition of use and exploring risk reduction measures. In Africa, Cameroon, Botswana, Malawi, Tanzania and Zimbabwe have shortlisted nationally registered HHPs for which immediate risk mitigation measures are required. In Asia, China and the Association of Southeast Asian Nations (ASEAN) countries are in the process of reviewing the registration of HHPs, ceasing the production and importation of specific products, and investing in the introduction of alternative low-risk products.

Myanmar has recently identified HHPs which are still registered and used in the country and is now focusing on risk mitigation.

Addressing HHPs is a key issue in sound management of chemical management, and scaling up addressing HHPs globally needs multi-stakeholder collaboration of IOMC POs including FAO, SACIM SEC, WHO, UNEP, UNDP, OECD, and UNIDO etc.



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Item 4 (d) of the provisional agenda*

**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Implementation of the health sector strategy**

**Report by the World Health Organization (WHO) on the
WHO Chemicals Road Map and Global Chemicals and Health
Network**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the World Health Organization on the WHO Chemicals Road Map and global chemicals and health network. The report is presented in the annex as received by the secretariat and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Report by the World Health Organization (WHO) on the WHO Chemicals Road Map and Global Chemicals and Health Network

The WHO Chemicals Road Map

In May 2017, the Seventieth World Health Assembly approved the *Road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond*¹ (the road map). The road map was requested by World Health Assembly Resolution WHA69.4 (2016) and, as requested, it builds on WHO's existing relevant work as well as the strategy for strengthening the engagement of the health sector in the implementation of the Strategic Approach² adopted by the third session of the International Conference on Chemicals Management (ICCM2) in September 2012.

The road map is available on the WHO website and in print, in all six UN languages. The road map identifies concrete actions where the health sector has a lead or an important supporting role to play in the sound management of chemicals, recognizing the need for multi-sectoral cooperation. The actions are organized into four areas, namely: risk reduction; knowledge and evidence; institutional capacity; and leadership and coordination.

The road map has been used by ministries of health and other health sector stakeholders to identify priority areas for further action including with other sectors and stakeholders, for advocating action from decision-makers and/or feed into other national planning processes. Capacity-building and the need for support to implement the road map, and the value of sharing experiences, for example through regional and subregional networking, have been highlighted as important considerations for the health sector moving forward.

As a companion to the road map, WHO developed the WHO chemicals road map workbook³ (the workbook) which offers a structured way to work through the road map, choose priorities, and plan activities. The workbook is also available online and in print, in all six UN languages. Use of the workbook can facilitate discussions within and among organizations about health sector priorities and potential activities to address these priorities. Exchange of information on priorities and planned actions could then lead to the identification of shared priorities, and greater collaboration and coordination within the health sector as well as with other sectors.

Health sector roles in road map implementation

It is recognized that all sectors and stakeholders need to work together to achieve the goal of sound management of chemicals throughout their life cycle. The road map identifies concrete actions where the health sector has either a lead or important supporting role to play. For those actions not completely within the mandate of the health sector, there still needs to be an awareness of the importance of the action, active support for implementation of the action and, in many cases, increased engagement by the health sector.

As well, for each action, the main actor, or lead, within the health sector, has been identified: either all stakeholders, WHO Member States or the WHO Secretariat.

¹ WHO Chemicals Road Map <https://www.who.int/ipcs/saicm/roadmap/en/> (Last accessed 5 March, 2019)

² SAICM/ICCM.3/24, annex V. <http://www.saicm.org/About/ICCM/ICCM3/tabid/5963/language/en-US/Default.aspx> (Last accessed 5 March 2019)

³ WHO chemicals road map workbook <https://www.who.int/ipcs/saicm/roadmap-links/en/> (Last accessed 5 March, 2019)

While it is recognized that, in many cases, success depends on cooperation between a variety of stakeholders and sectors, the identification of a lead within the health sector, where possible, is intended to be helpful and to facilitate progress.

Implementation of the road map by WHO

WHO has undertaken multiple activities where it was identified as the lead and/or joint lead with Member States as well as to support road map implementation by others. Technical activities are described in document SAICM/OEWG.3/INF/6 - Activities of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) to support Strategic Approach to International Chemicals Management (SAICM) Implementation.

In addition, WHO is promoting and raising awareness about the road map and workbook, supporting uptake and use, and providing a global coordination function.

The World Health Organization hosted a number of panel sessions on the road map and workbook during SAICM Regional meetings to prepare for the second intersessional meeting, as follows:

- Asian Pacific Region, Bangkok, Thailand, 23-25 January 2018
- Latin America and the Caribbean Region, Panama City, Panama, 23-29 January 2018
- Africa Region, Abidjan, Côte d'Ivoire, 6-8 February 2018
- Central and Eastern Europe Region, Lodz, Poland, 19-21 February 2018.

Panel participants offered examples of how the road map has been instrumental in the implementation of their national chemical safety agenda, and the importance of the health sector being involved in the management of chemicals. A summary of the panels is available online at:

<https://apps.who.int/iris/bitstream/handle/10665/279903/WHO-CED-PHE-EPE-18.07-eng.pdf>

WHO has also convened health sector side meetings at the first and second meetings of the intersessional process to prepare recommendations on the Strategic Approach and the sound management of chemicals and waste beyond 2020.

The WHO Secretariat met with civil society in May 2017 in Geneva, Switzerland, on the margins of the 70th World Health Assembly to introduce the road map and to identify activities of interest and areas for collaboration to support implementation of the road map. Activities of interest for civil society included: technical work on specific chemicals, safer alternatives; data collection of vital statistics and biomonitoring; tools for training and inclusion into academic curricula; partnerships with the health and environment sector; and awareness raising activities for health impacts of chemicals. A follow-up meeting was held in May 2018, in Geneva, Switzerland where civil society underscored the benefits of the roadmap and shared how they have been using the workbook to develop work plans.

WHO also had discussions with industry stakeholders who have expressed interest in supporting road map implementation.

The 72nd World Health Assembly in May 2019 will consider a progress report on the WHO Secretariat's implementation of the road map. A further report on progress, as well as on actions undertaken by the WHO Secretariat to update the road map in the light of the outcome of the intersessional process at the 74th World Health Assembly in 2021.

WHO Global Chemicals and Health Network

One of the actions in the road map mandates the WHO Secretariat to establish a global chemicals and health network, with links to existing subregional, regional and international networks, to facilitate health sector implementation of the road map. Following approval of the road map, WHO invited Member States to nominate a contact point for the WHO Chemicals and Health Network (the network).

The goal of the network is to facilitate implementation of the road map by promoting collaboration on common policy challenges, perspectives and priorities of health ministries in managing chemicals, especially in light of the intersessional process on SAICM and the sound management of chemicals and waste beyond 2020 (the intersessional process), and to facilitate continuity of contact among health ministries and with WHO.

The objectives of the network are to:

- Provide a forum to discuss implementation of the road map, including what different countries are doing and how, as well as challenges and success stories;
- Improve awareness of the health impacts of chemicals and the health sector role in chemicals management at national, regional and global levels;
- Identify common issues for discussion and collaboration;
- Foster greater inclusion of health sector perspectives in international chemicals discussions; and
- Provide a platform/venue for mutual support among Member States, for example, through sharing information and best-practices as well as funding opportunities.

By 7 March 2019, over 70 Member States had joined the WHO Global Chemicals and Health Network.

Inaugural Meeting of the WHO Global Chemicals and Health Network - Summary

Forty-one participating Member States attended the inaugural meeting of the Network held 5-8 November, 2018 in Geneva, Switzerland. The meeting laid the groundwork for how the Network will work together, and how the WHO secretariat can best support this. Member States developed posters to display at the inaugural meeting to share information on activities from the WHO Chemicals road map that they are addressing or planning to address as well as ideas for collaboration. Throughout the meeting, participants shared their experiences in using the road map, and were pleased with the poster session which raised awareness about the activities of other countries in their regions and in other regions. The poster session demonstrated the significant work on chemicals management undertaken by ministries of health and led to the identification of common challenges, successes, and opportunities for collaboration in the implementation of the road map.

Areas identified for future collaboration included:

- Better quantifying the impacts of chemicals on health including at country level;
- Implementing the chemicals components of the International Health Regulations;
- Sharing knowledge about poisons centres;
- Raising awareness of the health impacts of chemicals;
- Sharing regulatory approaches/legislation;
- Education and training for human biomonitoring;
- Coordinating efforts for the implementation of the Minamata Convention on Mercury;
- Phasing out lead paint; and
- Better integration of waste and disposal issues in the health sector.

Participants noted the challenge for the health sector to access and/or mobilize resources. The importance of multi-sectoral cooperation, and common goals was underscored as a way to increase the health sector's ability to access resources. The suggestion was made to leverage the capacity-building strategy from the WHO Chemical Risk Assessment Network, which comprises more than 90 risk assessment institutions worldwide. Participants were keen to expand their poster to share with the Network a more complete picture of all the activities being undertaken.

One session of the meeting covered the Health in All Policies approach⁴ (HiAP), an approach to public policies across sectors that systematically takes into account the health implications of decisions, seeks

⁴ WHO chemicals road map workbook <https://www.who.int/healthpromotion/frameworkforcountryaction/en/> (Last accessed 5 March, 2019)

synergies, and avoids harmful health impacts, in order to improve population health and health equity. The HiAP can be used to engage, break down the silos, and negotiate effectively with other sectors and stakeholders so that the health sector is able to secure agreements on chemical management. The roadmap was highlighted as a HiAP approach.

Another session covered the UNEP Special Programme on Institutional Strengthening that provides support to developing countries and countries with economies in transition to enhance their sustainable institutional capacity to develop, adopt, monitor and enforce policy, legislation and regulation for effective frameworks for the implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention and SAICM. Network members were provided with suggested types of road map activities that would qualify for the programme and were encouraged to submit project application for the third round.

The SAICM Secretariat provided an update on the beyond 2020 Intersessional Process and David Morin, co-chair of the intersessional process, provided an update on the draft co-chair's paper that will be submitted to the third session of the ICCM's Open-Ended Working Group meeting⁵. The importance of health ministry engagement in the beyond 2020 process was underscored. Views shared by the participants included:

- On targets and objectives, it was suggested that a number of health sector activities be specifically included, such as poisons centres and public access to information through labelling, and that the role of the health sector should be clearly visible.
- Regarding engagement in international fora, delegations to meetings should include the different sectors, and travel support provided to enable health participation. National coordination in preparing for international meetings was considered crucial in order to ensure that all perspectives are covered.
- The participants also considered how the health sector could be better represented in chemical-relevant discussions at national level. In that the focal point for SAICM is often the ministry of environment, participants proposed that a national interagency committee be set up and more guidance be provided on selecting which entity is the focal point, how the focal point would relate to sectors outside her/his own, and what roles, such as co-chairs, other ministries might carry. It was proposed that national committees be co-chaired by the health and environment ministries.
- In examining the need for a science policy forum or other subsidiary bodies, it was questioned whether the issue was lack of science but rather a lack of policy coherence and political will. Existing bodies were noted and emphasis placed on strengthening ties between existing bodies and avoiding competing for resources. The science perspective was seen as essential, but needed to involve the national and local levels, and to be translatable at that level to improve people's health. The need for more work on quantifying the burden of disease from chemicals and products was highlighted as was the need for more science in developing countries.

Participants were invited to consider attending the upcoming third session of the Open Ended Working Group meeting.

The meeting concluded with Member States recommending the network to meet again, face-to-face in 2020, after the outcome of the ICCM and before the required report to the World Health Assembly in 2020, to finalize the plans for the beyond 2020 period.

⁵ Third session of the Open Ended Working Group meeting.

<http://www.saicm.org/About/OEWG/OEWG3/tabid/5984/language/en-US/Default.aspx> (Last accessed 5 March , 2019)



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**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Financing of the Strategic Approach**

**Evaluation of the implementation of the integrated approach
to financing the sound management of chemicals and waste**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the evaluation of the implementation of the integrated approach to financing the sound management of chemicals and waste, received from the United Nations Environment Programme. The report is presented in the annex as received and has not been edited by the secretariat.

Summary

The integrated approach to financing sound management of chemicals and waste was proposed by UN Environment Programme Executive Director as the final outcome of the consultative process on financing options for chemicals and waste launched at the fourth meeting of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants in May 2009. This process aimed to address the increased need for “sustainable, predictable, adequate and accessible financing for the chemicals and waste agenda while also increasing the political priority accorded to the sound management of chemicals and waste”.

The integrated approach was adopted by the UN Environment Programme Governing Council in 2013 (GC27/12). It is composed of three complementary and interlinked components: (i) Mainstreaming of the sound management of chemicals and waste into development planning; (ii) Industry involvement; and (iii) Dedicated external financing. The Governing Council of the United Nations Environment Programme, in its decision,¹ requested the Executive Director to facilitate an evaluation of the implementation of the integrated approach in cooperation with all relevant stakeholders and submit the evaluation, including recommendations, within six years for consideration by the Governing Council/Global Ministerial Environment Forum, the relevant COPs and ICCM5. This present INF document fulfils the Governing Council request.

* SAICM/OEWG.3/1.

¹ UNEP/GC.27/17 : Decision 27/12: Chemicals and waste management, VIII, para.18

Annex

Evaluation of the implementation of the integrated approach to financing the sound management of chemicals and waste

I. Purpose and context of the evaluation

A. Purpose

1. The overarching purpose of this evaluation is to evaluate the effectiveness of the implementation of the integrated approach with the aim of assessing how the integrated approach has contributed to the implementation of the chemicals and waste activities and to inform future refinements and adjustments for the integrated approach. As per Governing Council decision 27/2, the evaluation aims to assess *the effectiveness of each of the three components of the integrated approach and the linkages and synergies between them*. Some elements to the integrated approach were deliberately left undefined to allow flexibility in the first 6 years of implementation. Therefore, the evaluation will assist with clarifying how implementation is happening in practice and whether this is sufficient to achieve the desired impacts of the integrated approach, as were envisioned in 2013.

B. Context

2. In addition to the 2009-2011 consultative process and the Governing Council 27/7 decision, other related processes and events since 2013 shape the expectations and implementation of the integrated approach. The post-2015 Sustainable Development Agenda includes specific reference to chemicals and waste management, with calls for adequate financial and other resources for the sound management of chemicals and waste under SDG12 -Ensure sustainable consumption². A second notable process is the intersessional process on SAICM and the sound management of chemicals and waste beyond 2020 [hereafter: intersessional process] currently underway.

C. Evaluation scope and objectives

3. Within available resources, the evaluation focuses on implementation from 2014 to 2018 by UN Environment Programme, the BRS Conventions, SAICM and the Global Environment Facility [hereafter: GEF], and impacts at global, regional, national and sub-national levels that can be distilled from available documents; and not on data from national governments or other actors. The evaluation objectives are to:

- (a) Provide further clarity, as needed, on the intended steps to implement the integrated approach and related impacts of the integrated approach as it was implemented from 2014 to end 2018.
- (b) Establish a baseline for 2013 and evaluate current implementation modalities and impacts, with evidentiary support from 2014 to end 2018.
- (c) Provide input to integrated approach actors by identifying gaps and possible options for future implementation.
- (d) Provide recommendations on how to further strengthen the integrated approach for enhanced impact at the global, regional and national level.

II. Evaluation framework and methods

4. The evaluation was conducted by an independent consultant who has no obligations or conflicts of interest with respect to the integrated approach, BRS and Minamata Conventions, SAICM or key constituencies in its implementation (See Appendix 1 for the Terms of Reference).

A. The evaluation approach

5. The integrated approach was established to build upon and increase synergies across many efforts. This is complex terrain, with many actors and ongoing initiatives. Attribution problems arise for evaluating the integrated approach as a result because:

- (a) Activities that could be categorised as implementation of the integrated approach may have happened regardless of the approach;

² <https://sustainabledevelopment.un.org/topics/chemicalsandwaste>, last accessed 8 February 2019

(b) Outcomes observed for resource mobilization, financial flows, institutional strengthening and project arrangements may be the consequences of multiple causes; and

(c) The approach is open and flexible, intended for implementation by many different stakeholders at different levels, with no one programme defining specific activities, setting expected outcomes, and measuring and monitoring impacts.

6. Given these attribution problems, the evaluation seeks to understand the possible *contribution* of the integrated approach to the stated goals of improving financing for the sound management of chemicals and waste for the long term and at all levels.³ The evaluation builds a contribution narrative (Section III.B) based on a review of decision documents and stakeholder input and then tests this narrative by (i) documenting examples of implementation and comparing those to what was originally intended in the Governing Council 27/7 decision (Section III, and Appendix 3); and (ii) constructing some illustrative cases of achieved impacts on integrated financing (Section IV). Given this data, evaluator's comments explore whether the contribution narrative appears reasonable. The final two sections report on lessons and recommendations for future implementation of the integrated approach. (Section V, VI).

B. A proposed contribution narrative for the integrated approach

7. The contribution narrative tested in this evaluation is:

The integrated approach of mainstreaming, industry involvement and dedicated external financing will provide sufficient enabling conditions for effective financing at different levels and for the long term because its components are used synergistically and by different stakeholders in a mixture of:

(a) **Normative uses:** The integrated approach is used to prescribe pathways and standards for integrated financing pathways that ultimately reinforce efforts at global, regional, national and subnational levels on financing sound management of chemicals and waste;

(b) **Strategic uses:** The integrated approach is used as a mandate or as a support to gain additional mandates for co-financing policies; proposals for new programmes of work, co-financed activities; or advocacy on integrated financing of sound management of chemicals and waste.

(c) **Catalytic uses:** The integrated approach is used to kickstart new sustainable and predictable funding flows through enhanced institutional capacity, relationships and joint actions (new networks, collaborations, partnerships);

(d) **Instrumental uses:** The integrated approach is implemented as a specific activity in projects, whereby it at least two components of the integrated approach is are used deliberately to generate novel financing and supporting institutional arrangements;

(e) **Conceptual uses:** The integrated approach is used to introduce a new framing of issues or perspectives on financing of sound management of chemicals and waste in the chemicals and waste community internationally, regionally and nationally;

So that clear and measurable outcomes⁴ emerge in the form of:

Increased mobilisation of financial or in-kind resources, dedicated specifically to sound management of chemicals and waste for the long-term and at all levels; and

Institutional strengthening for implementation of sound management of chemicals and waste at regional, national and sub-national governmental levels, in private sector operations and in civil society actions for the long-term and at all levels;

That have a strong likelihood of contributing to on-the-ground impact on improved environmental quality, human health and sustainable economic development.

C. Evaluation framework, methods and data sources⁵

8. Questions guiding the analysis documents and stakeholder perspectives are listed in Table 1. The integrated approach is not a formal programme with specific goals, objectives, targets, agreed measurements, or monitoring and ongoing evaluation procedures to rely upon for a full evaluation. Therefore, the independent consultant prepared an appropriate evaluation framework and approximate

³ A contribution narrative is one form of a Theory of Change. Mayne, J. (2008). Contribution analysis: an approach to exploring cause and effect. Institutional Learning and Change Initiative, CGIAR. Retrieved from:

<https://cgspace.cgiar.org/handle/10568/70124> ; Patton, M. (2011) *Developmental Evaluation: Applying complexity concepts to enhance innovation*. Gillford Press: New York.

⁴ These impacts synthesise those mentioned explicitly in the founding documents for the integrated approach.

⁵ See Appendix 2 for more details on methods, data sources and the lessons learning procedure.

baseline (See III.A, B, C) for the integrated approach. Subsequently, a desktop review of available documents was used to generate a set of examples on which to assess implementation modalities and activities (See Appendix 3). Stakeholder perspectives were elicited through a series of stakeholder interviews. A call for written perspectives on this evaluation report was disseminated to the SAICM stakeholders. Original submissions will be made available on the UN Environment Programme webpage in advance of UNEA4 or when received to share these stakeholder voices. A lessons learning discussion was facilitated by the independent consultant with UN Environment Programme, SAICM and Special Programme representatives.

Table 1: Evaluation framework for the implementation of the integrated approach 2014-2018

Is the integrated approach being implemented as intended? • How was the integrated approach intended to be implemented? • What type of implementation modalities are emerging? • How does implementation in practice compare with what was expected in 2013?
Are the intended outcomes of the integrated approach being realised? • What is the intended outcome and impact of the integrated approach? • Are financial flows to sound management of chemicals and waste increasing? Are there examples of institutional strengthening emerging? • Is the integrated approach contributing? How?
What major lessons are being learned? • What is working? What is less effective? • What are some key strengthening actions? What are key barriers?

D. Limitations and assumptions

9. No formal baseline exists for the integrated approach. Moreover, the integrated approach is a guiding concept that can be adopted by any organisation at any level. Given the resources available for this evaluation, a comprehensive and systematic review and evaluation of how the integrated approach is being implemented by different actors across the chemicals and waste communities at international, regional, national and subnational levels is not currently feasible.

10. Some key assumptions made in this analysis include:

- The Governing Council decision 27/7 supersedes all previous articulations of the integrated approach and is used as the baseline for intended implementation and impacts in this report.
- GEF external dedicated financing support is used as a model of how the integrated approach can and is being implemented, but does not imply GEF activities are directed by the integrated approach.
- Evidenced examples of implementation by UN Environment Programme, the Chemicals and Waste Conventions, SAICM and the GEF are sufficient to test the contribution narrative.

III. Implementation 2014-2018 review

- The guiding questions for evaluating implementation of the integrated approach are:
 - How was the integrated approach intended to be implemented?
 - What type of implementation modalities are emerging?
 - How does implementation in practice compare with what was expected in 2013?

A. How was the integrated approach intended to be implemented?

12. The baseline in 2013 can be characterised as: Mainstreaming implementation was supported by a number of guidance documents on mainstreaming practices primarily directed at national governments. UN Environment Programme published the Global Chemicals Outlook (1st edition) in 2011 to give a rationale to mainstreaming efforts at regional and national levels. Outreach to other international organisations and agencies requesting that they strengthen their efforts to support governments in implementing mainstreaming and industry involvement largely involved the ongoing Inter-Organisation Programme for the Sound Management of Chemicals [hereafter: IOMC]. Industry engagement through financial contributions and in-kind contributions were ad-hoc, driven case-by-case and not measured or understood in a comprehensive or transparent way. In 2013, the GEF-5 cycle was three years in to implementation, with 1 global project and 27 other projects supporting action on persistent organic pollutants (Stockholm Convention), ozone depleting substances (Montreal

Protocol), Sound chemicals management (SAICM and mercury reduction in 26 countries approved prior to 2013. The total envelope for chemicals and waste was \$420 million.⁶ The Special Programme to support institutional strengthening at the national level for the implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention and SAICM did not yet exist. The Quick Start Programme [hereafter: QSP] had declared non-Trust Fund contributions of US\$3,644,000. 16 countries and 2 Civil Society Organisations [hereafter: CSOs] in the regions of Asia-Pacific, CEE, Africa and GRULAC received QSP funding through 17 projects totalling US\$3,743,071. The outcome of the consultative process on financing had shown however that funding was not sustainable and predictable, and this was a source of growing frustration for developing and donor states, international agencies and CSOs alike.

13. Implementation of the three components was foreseen to be undertaken by a broad number of stakeholders and “*would require that dedicated and concerted efforts be taken through, but not limited to*” the following⁷:

- (a) Decisions of the Governing Council, the conferences of the parties to the chemicals- and waste-related conventions and the International Conference on Chemicals Management would be made in support of efforts at the national level to further enhance efforts on mainstreaming and industry involvement for the sound management of chemicals and waste;
- (b) Requests to other international development organizations and agencies that they strengthen their efforts to support Governments in implementing elements of the non-exhaustive lists on mainstreaming and industry involvement set out in the integrated approach;
- (c) Sustainable and predictable funding provided both by donor and recipient countries for the implementation of the elements of institutional strengthening set out in the integrated approach;
- (d) Establishment of a revised focal area on chemicals and waste under the GEF, with new and additional resources being provided through the replenishment process.

B. Findings: What type of implementation modalities are emerging?

14. Casting a wide net to understand how the integrated approach is being realised in practice, this review is based on nine examples of implementation (See Appendix 3) and findings are discussed under the five possible modalities in which the integrated approach could be used: normative, strategic, catalytic, instrumental and conceptual.

15. **Finding 1: Normative uses.** The integrated approach is being used formally to establish prescribed pathways and standards for integrated financing of sound management of chemicals and waste. Direct invitations were extended by Basel, Rotterdam, Stockholm Conventions [hereafter: BRS] and SAICM (Examples 1,2,3) to GEF, UN Environment Programme, national governments and other stakeholder to implement the integrated approach. These decisions should support efforts at regional, national and subnational levels to further enhance efforts on financing, through mainstreaming, industry involvement and seeking dedicated external financing, as per the intended implementation efforts on (a) Decisions and (b) Requests. However, evidence that these decisions are yielding new national actions on mainstreaming and industry involvement as a result of the integrated approach itself is lacking. One stakeholder pointed to the lack of “integration and prioritisation of chemicals and waste” in a large number of UN Development Assistance Frameworks [hereafter: UNDAFs] as a clear example that the invitations to implement the integrated approach have not been taken up to the extent intended.

16. **Finding 2: Strategic uses.** There is evidence that the integrated approach was used as a support to gain additional mandates for co-financing policies and proposals for new programmes of work with co-financed activities dedicated to chemicals and waste, as per the intended effort on (d) GEF Chemicals and Waste focal area strategy and structure and in laying the foundations for sustainable and predictable funding. GEF reports⁸ shows the move towards an integrated focal area on chemicals and waste is happening with additional resources being included for chemicals and waste in each successive replenishment since 2013 (See Section IV below). However, there are different opinions among stakeholders regarding the actual influence of the integrated approach in the changes in the GEF strategy (Example 3). The direct link to the mandate of the Special Programme is clear

⁶ https://www.thegef.org/sites/default/files/documents/GEF-5_FOCAL_AREA_STRATEGIES.pdf;
http://www.thegef.org/sites/default/files/council-meeting-documents/GEF_R.6_17_Fifth_Overall_Performance_Study%2C_final%2C_November_20%2C_2013_4.pdf last accessed on 8 February 2019.

⁷ Governing Council 27/7, para. 50.

⁸ GEF/A.6/07, pg 77. Available at : http://www.thegef.org/sites/default/files/council-meeting-documents/GEF.A6.07_OPS6.pdf, last accessed 8 February 2019 ;

(Example 4) with the total amount pledged and contributed to date since the establishment of the Special Programme Trust Fund (2015 – 2018) is US\$ 25,898,357.

17. **Finding 3: Catalytic uses.** The normative and strategic uses of the integrated approach are leading to catalytic efforts to kickstart sustainable and predictable funding flows through the GEF and the Special Programme, as per the intended implementation for sustainable and predictable funding. One fundamental design element of these programmes is the deliberate connection of donor and recipient country co-financing to generate new financial and in-kind contributions (See Section IV below for further discussion). New institutional strengthening and joint action outcomes are evidenced at global, regional levels and national levels in GEF and Special Programme projects (Examples 5,6,7). In some cases, the transition to a more regionalised approach has been a challenge for some developing countries whose near-term funding at national level has not met their expectations (Examples 7).

18. **Finding 4: Instrumental uses.** There is evidence that the integrated approach is explicitly implemented as an activity by some national governments in certain fora and in the project funding review procedures (Examples 8 and 9) to shape financing flows and reduce duplication, as per intended implementation for sustainable and predictable funding. However, deliberate instrumental use of the integrated approach by national governments at scale in to trigger new financial and in-kind participation of industry and other partners is not strongly evidenced. This is partly a result of no data collection on implementation at these levels⁹. However, some stakeholders also refer to barriers like the vagueness of what it means to implement the integrated approach and perceptions in some developing countries that it is only for developed countries as a way of implementing their own chemicals and waste programmes and organising their donor contributions. One interviewee reflected: “we have this [integrated approach] for over half a decade. We need to not just to communicate around it. It has to be operationalised in countries by countries. There needs to be a stronger sense of ownership across the board”.

19. **Finding 5: Conceptual uses.** Though this is not a specific intended implementation of the integrated approach, the integrated approach is used to conceptualise financing challenges and actions in some sections of the chemicals and waste community. Those who were part of the original UN Environment Programme consultative process and conventions synergies process (which happened in parallel, with a lot of cross-fertilisation) share the integrated approach as a common idea. Over time, this conceptual influence may be waning. Not all stakeholders consider their actions on financing to be connected to the integrated approach (Example 3). Though as one stakeholder who was part of the consultative process reflects: “Perhaps no one outside of the process itself knows what the integrated approach is, per se, or uses the term. But they do use and implement ‘mainstreaming’ and ‘industry involvement’”.

C. **Evaluator’s comment: Is the integrated approach being implemented as intended?**

20. There is evidence to support a conclusion that the integrated approach is being implemented as intended, broadly speaking, though instrumental use in countries is less developed than appears to have been expected in 2013. The examples explored suggest multiple stakeholders are involved and the three components are being developed simultaneously with linkages and synergies in certain cases. Decisions are being made on the basis of or at least referencing the integrated approach. Requests to national governments, international development organisations and agencies, and the private sector have been made but have not always had the desired response. Funding is being provided both by donor and recipient countries for the implementation of the elements of institutional strengthening set through the Special programme but not enough possibly given the “sustainability and predictability” requirement. The establishment by “the GEF Council and the GEF Assembly of a revised integrated focal area on chemicals and waste, including the proposed characteristics of the focal area, with new and additional resources being provided through the replenishment process” has occurred, though it is not possible to conclude that this was driven exclusively by the integrated approach. The integrated approach has had a strong conceptual influence that perhaps was not considered in setting expectations for implementation in 2013. One stakeholder refers to the integrated approach as an idea “ahead of its time” considering that it was discussed and formulated ahead of the Sustainable Development Goals.

⁹ There are some relevant indicators in existing reporting systems but no data could be found to evidence progress at the time of this evaluation. For example, the GEF Chemicals and Waste tracking tool 2015: “Indicator 6.1: The extent to which countries have successfully mainstreamed chemical priorities into national budgets.1” – reporting column is marked NA, presumably for “Not Available”

IV. Outcomes review 2014-2018

21. Recalling that this evaluation can, at best, infer contribution of the integrated approach to desired outcomes of guiding questions for evaluating whether or not the expected impacts of the integrated approach are being observed are:

- (a) What is the intended outcome and impact of the integrated approach?
- (b) Are financial flows to sound management of chemicals and waste increasing? Are there examples of institutional strengthening emerging?
- (c) Is the integrated approach contributing? How?

A. What is the intended outcome and impact of the integrated approach?

22. While not articulated in terms of formal expected outcomes or impacts in GC27/7, the intention appears to have been to trigger change in funding priority, approach, policy, practices or other behaviours that could reasonably be expected to result in: (i) **Increased mobilisation of financial or in-kind resources**, dedicated specifically to sound management of chemicals and waste for the long-term and at all levels; and (ii) **Institutional strengthening for implementation** of sound management of chemicals and waste at regional, national and sub-national governmental levels, in private sector operations and in civil society actions for the long-term and at all levels.

B. Are financial flows to sound management of chemicals and waste increasing?

23. Table 2. gives some illustration of the evolution in funding made available to implementers of sound management of chemicals and waste that since 2013. An important caveat is that much of the necessary information to compile a robust assessment of funding trends is not available at the time of writing this report. Most notably, the table does not include an analysis of co-finance leveraged through the QSP, Special Programme and GEF grants. However, it provides a basic understanding from which the state of financial flows to sound management of chemicals and waste can be evaluated. Further evaluative work on the integrated approach – and the real state of financing for sound management of chemicals and waste – could be undertaken in future.

Table 2: Overview of known financial flows to sound management of chemicals and waste under the integrated approach components

Year	(a) Mainstreaming		(b) Industry involvement	(c) Dedicated External Financing		
	New and additional national budget allocations (US\$)	Leveraged co-financing arrangements (US\$)	Annual SAICM industry contribution (EUR) ^a	QSP (US\$) / Special Programme seed funding (US\$) ^b	Annualised average committed per 5-year GEF cycle, (US\$)	Other bilateral sources (US\$)
Baseline: 2013	Unknown	Unknown	150,000	3,743,07	84,000,000 (GEF-5)	Unknown
2014	Unknown	Unknown	150,000	929,939	84,000,000 (GEF-5)	Unknown
2015	Unknown	Unknown	150,000	QSP closed SP established	110,000,000 (GEF-6)	Unknown
2016	Unknown	Unknown	150,000	1,750,000 (7 projects)	110,000,000 (GEF-6)	Unknown
2017	Unknown	Unknown	150,000	5,096,735 (17 projects)	110,000,000 (GEF-6)	Unknown
2018	Unknown	Unknown	150,000	- ^c	110,000,000 (GEF-6)	Unknown
2019	Unknown	Unknown	150,000	4,703,849 (18 projects)	131,000,000 (GEF-7 ^d)	Unknown

^a Does not include Responsible Care operations costs, or costs to implement Responsible Care in member companies, nor ad-hoc financial and in-kind contributions or voluntary actions that are taking place.

^b Does not include co-financing contributions leveraged by or operations costs of the Special Programme.

^c No projects approved in 2018. 4th Executive Board meeting was postponed to early 2019

^d Final allocations within each focal area will be determined by country demand. Projections are indicative. pg13 GEF/R.7/22

Mainstreaming

24. To the best of the knowledge of the stakeholders interviewed, there is no ongoing, scaled monitoring of the financial and in-kind contributions being triggered by the various mainstreaming (but not limited to). This includes the reporting through the SAICM progress report process which does not provide such information: (i) Development assistance programmes and other bilateral agreements that result in resource mobilization by national governments for sound management of chemicals and waste in recipient countries; (ii) Synergy funding from inter-ministerial action on and joint financing of sound chemicals and waste management activities in-country; and (iii) Other co-financing partnerships with the private sector, research educations, and civil society groups resulting in financial and/or in-kind contributions in-country that support implementation of national actions and/or reduces cost burdens on national budgets. Examples are available of what the ambitions could look like in future (See Appendix 3, Examples 5, 6, 9, 10). However, because these are not available in a more aggregated form, these contributions are listed as “unknown” in Table 2 above.

Industry involvement

25. Industry is one of the non-government contributions to the SAICM secretariat. The industry stakeholder interviewed suggested that “because of SAICM, industry is at the table and it is much easier to make partnerships [with national governments]. However, not all resulting activities are being tracked and evaluated. There is not enough clarity or agreement on what should count or be sought as industry contributions, and no concerted effort seems underway to resolve this. Similar to the mainstreaming data gaps, understanding exactly how industry might be participating at national level (tax, implementation of sound management of chemicals and waste legislation, public-private partnerships on infrastructure, capacity development) and the financial mobilisation outcomes of this participation is not currently possible. For this reason, these contributions are listed as “unknown” in Table 2 above.

Dedicated external finance

26. The Special Programme is enjoying funding success in its early years, however there is a recognised need to go beyond the traditional donor base, which was effectively inherited from the QSP. Successful award of a Special Programme project requires a minimum of 25% co-financing from the applicant country. So far, the trend has shown 100% co-financing is common¹⁰. The Argentina model of national government and private sector co-financing partnership, and its resulting success in securing co-financing letters of support from private sector for a forthcoming GEF-7 application (Appendix 3, Example 10) is a taste of what leveraging outcomes might become the standard to strive for in future Special Programme projects.

27. Table 3 shows the evolution of GEF financing to chemicals and waste over time. GEF-5 focussed on POPs and ODS. In GEF-6, the Chemicals and Waste strategy sought to support the development of enabling environments, economic models and financial mechanisms for sound management of chemicals and waste. In GEF-7, more emphasis is placed on sustainable production and consumption including stronger private sector engagement and sustainable financing at the national level. GEF replenishments are leading to increased funding share for the Chemicals and Waste focal area, largely reflecting growing implementation of the Minamata Convention. GEF-7 also sees the creation of proposed Impact Programs, two of which (out of three) promising to deliver on chemicals and waste outcomes. However, actual financial contributions to sound management of chemicals and waste activities are unclear as yet. Co-financing outcomes for GEF-6 in the chemicals and waste portfolios are recorded at 3.1 billion leveraged in financial and in-kind contributions from a range of stakeholders, but most notably from the private sector.¹¹

28. A number of stakeholders interviewed mentioned other potential sources of dedicated external financing – particularly bilateral funding – that might serve both catalytic and instrumental implementation uses. For this reason, these contributions are listed in Table 2 above.. However, because of the original definition of the integrated approach explicitly mentions the GEF and the Special Programme, these other sources not being recognised sufficiently as being part of, or the product of, the integrated approach amongst key constituencies.

¹⁰ Special Programme 1st, 2nd, 3rd and 4th Executive Board reports

¹¹ GEF programming documents and performance reports Available at

: http://www.thegef.org/sites/default/files/council-meeting-documents/GEF.A6.07_OPS6.pdf

https://www.thegef.org/sites/default/files/documents/GEF-5_FOCAL_AREA_STRATEGIES.pdf

<https://www.thegef.org/sites/default/files/documents/GEF-6%20Programming%20Directions.pdf>

https://www.thegef.org/sites/default/files/council-meeting-documents/GEF-7%20Resource%20Allocation%20and%20Targets%20-%20GEF_R.7_22.pdf

Table 3: Overview of the evolution in GEF Chemicals and Waste

	GEF-5 2010-2014	GEF-6 2014-2018	GEF-7* 2019-2023	TOTALS (2010-2023)
GEF replenishment Chemicals and Waste Focal Area Envelope (US\$, millions)	420	554	655	1,629
Share of total fund	10.00%	12.50%	14.48%	
Stockholm / Persistent organic pollutants	375	375	392	1,142
Montreal / Ozone depleting substances	25	25	25	75
Sound chemicals management and mercury reduction				
SAICM (and mercury until GEF-6 cycle)	20	13	13	46
Minamata	0	141	225	366
Impact programmes (by chemicals and waste targets) (US, millions)				
9. Chemicals of global concern reduced or eliminated (1,000 metric tons)				
Food, Land-use and restoration (US\$470m)	n.a.	n.a.	**	**
Sustainable Cities (US\$ 170 million)	n.a.	n.a.	0	0
Sustainable Forest Management in Major Biomes (US\$ 285 million)	n.a.	n.a.	**	**
10. POPs to air reduced or avoided (gTEQ)				
Food, Land-use and restoration (US\$470m)	n.a.	n.a.	0	0
Sustainable Cities (US\$ 170 million)	n.a.	n.a.	**	**
Sustainable Forest Management in Major Biomes (US\$ 285 million)	n.a.	n.a.	0	0
<i>*Final allocations within each focal area will be determined by country demand, and the line-item projections are therefore only indicative. pg13 GEF/R.7/22</i> <i>**Chemicals and Waste impact is expected (in terms of metric ton reductions) but not clear as to how much of the impact programme funding is being allocated to safe chemicals use or sound management of chemicals and waste activities)</i> Source documents https://www.thegef.org/sites/default/files/documents/GEF-5_FOCAL_AREA_STRATEGIES.pdf https://www.thegef.org/sites/default/files/documents/GEF-6%20Programming%20Directions.pdf https://www.thegef.org/sites/default/files/council-meeting-documents/GEF-7%20Resource%20Allocation%20and%20Targets%20-%20GEF_R.7_22.pdf				

C. Are there examples of institutional strengthening emerging?

29. It is relatively early days for the Special Programme, with most of its projects not yet through full implementation. However, as one example, having successfully received funds from the pilot round of applications from the Special Programme, Benin used their new capacity to draft a project proposal under the Minamata Convention Specific International Programme [SIP] which was also approved for funding. A quote the Benin focal point: "...under this last [SIP] project, Benin used the capacities acquired during the drafting of the Special Programme." (Appendix 3, Example 5)

30. The GEF move towards a regional approach is regional networks, facilitating knowledge exchange and efficient use of technical capacity (Example 7). The GEF-7 co-financing policy also presents a new categorisation of co-financing modalities and models that disaggregates source of co-financing by actor type. This may not be a direct result of the integrated approach, but it speaks to its call to understand and document industry involvement better. This is potentially a key driver for a more comprehensive implementation of the integrated approach in future given that it will be clear who is, and is not, participating in meeting GEF co-financing requirements.¹²

D. Evaluator's Comment: Is the integrated approach contributing to financing and institutional strengthening outcomes? How?

31. In the case of the Special Programme, progress on resource mobilisation and institutional strengthening can be seen in the early examples emerging from the programme; and because the Special Programme was set up as a direct implementation of the integrated approach, the contribution is clear. Even if the exact nature of the integrated approach's influence on the evolutions in the GEF Chemicals and Waste focal area is not understood in the same way by all stakeholders, the results being observed is what was originally intended as an outcome by the integrated approach. While some data and evidence exists but due to the lack of baseline, indicators and verification methods, mainstreaming and industry involvement financing and institutional strengthening outcomes are difficult to evaluate.

¹² GEF-7 Co-financing policy changes were shared in a stakeholder interview.

V. Lessons learned

32. Stakeholder assessments¹³ of what is effective or less effective in the integrated approach are used to distill some key lessons and identify elements that to be strengthened to improve delivery.

A. What is working well in the integrated approach?

33. Stakeholders identified five key areas that are working well for implementation and intended outcomes of the integrated approach, and are relayed in their voice:

(a) The direct access to funds for developing country governments provided by the Special Programme is working.

(b) The connection between health and chemicals and waste issues, and chemicals and trade, seems to be an effective entry point at national levels.

(c) The integrated approach is raising awareness about the financing needs of developing countries and it does have the support of some key development partners for those countries.

(d) The integrated approach is generating new commitments to creating new institutions and enhanced capacities for sound management of chemicals and waste through the Special Programme. For example, there are stated objectives for establishing national level capacities on chemicals and waste in Special Programme projects.

(e) Good examples of multi-stakeholder participation and coordination are emerging, with some evidence of more strategically designed projects and implementation coherence. Real outcomes will have to be assessed in future, but it is promising. Examples include GEF GOLD Program and the SAICM project on emerging policy issues and knowledge management (Appendix 3, Examples 6, 11).

B. What is less effective in the integrated approach?

34. Six key areas that are less effective for the implementation and intended outcomes of the integrated approach were identified by stakeholders, and are relayed in their voice:

(a) Financial allocations to the chemicals and waste agenda are growing, but not at the rate expected. Moreover, while the funding base remains somewhat stable is not expanding significantly beyond the traditional donors. In some cases, existing donors have shifted their contributions between a growing number of financial mechanisms. So, while the landscape for financing sound management of chemicals and waste has diversified, it has also become more complex and competitive.

(b) There are good examples of industry involvement emerging but the experiences are not being pooled and synthesised to create replicable models that explicitly address equity considerations, perceived institutional barriers and ethical concerns. We do not have a clear and shared idea of what successful industry involvement should look like in its mechanisms or in its financial or in-kind contribution outcomes as yet.

(c) Civil society has lost out from the closure of the QSP to which civil society could apply for funding. The Special Programme does not consider CSOs as an institution for implementation and this has generated concerns among civil society organizations.

(d) There is a perception in some developing country governments that the integrated approach is mainly for developed countries towards encouraging greater financing commitments from the traditional donors. Political will is needed at national level in developing countries to implement the integrated approach, in particular mainstreaming but ownership may be lacking.

(e) Links to other focal areas and clusters in GEF and in the Sustainable Development Goals that could result in new finance sources are not being adequately explored. Is the integrated approach, as it is currently defined, stifling our creativity?

(f) After only three years of operations, some outcomes expected by stakeholders are not being met by the Special Programme as yet. Sustainability concerns are present because in some cases national government staff are still paid by project money and when that is over, capacity is lost.

¹³ Elicited through stakeholder interviews and a mini-workshop held with three representatives of UN Environment Programme and SAICM on 7 February 2019 (see Appendix 2 for the lessons learning discussion plan).

C. Five key lessons on achievements and challenges

35. Five key lessons were identified by stakeholders, and are relayed in their voice:

- (a) The experience of the GEF and the Special Programme shows how money acts as a “centre of gravity”, focussing partnerships, project structures and reporting mechanisms. We need other centres of gravity to strengthen cooperation and implementation of the integrated approach. Focussing on impact, showing how the strategic objectives of other programmes and projects can be achieved through implementation of the integrated approach, and the chemicals and waste agenda more broadly, might provide an alternative focus.
- (b) Being an environment-focussed organisation, and being hosted in such an organisation in the case of Chemicals and Waste-related conventions, means our national governments focal points are also typically environment-focussed, i.e. in Ministries of Environment. This has contributed to a lack of exposure for the chemicals and waste agenda in line ministries for planning, finance, trade and economic development and perhaps fewer “doors opening” in international and regional development banks. Others are not perceiving the chemicals and waste agenda as an integrated agenda.
- (c) The experience of the Special Programme shows it takes time and a concerted effort on trust-building in order to mobilise the desired scale of finance. Early on, we had feedback that donors would like to support the Special Programme but it is challenging to ask for money from finance ministries for something that does exist yet or does not have a long track record. Demonstrating best use of resources, efficient running of secretariat, openness and transparency are key for future activities.
- (d) When it comes to industry involvement, we have been interpreting this as the chemicals industry and focussing on this part of the private sector exclusively. Could we expand beyond that into high-intensity chemicals users in the value chain, and downstream retailers?
- (e) The integrated approach is not clearly linked to on-the-ground outcomes for environment and health. As a result, the impact story is weak. This contributes to misinterpretations about what the integrated approach is and achieves. The Special Programme is clearly defined; but other elements of the integrated approach are being lost. Moreover, without definitions of what social, environmental and economic outcomes and impacts could be expected from the integrated approach its relevance is unclear for national governments, private sector and other stakeholders.

D. Key areas to strengthen based on these lessons

36. For these lessons to be learned, we should strengthen:

- (a) The chemicals and waste agenda in the implementation of the 2030 Sustainable Development agenda, beyond the current focus on SDG12. In developing future policy approaches, in particular mainstreaming and national action, real and effective linkages need to be made to integrating mechanisms like UNDAFs.
- (b) Interagency collaboration and multi-stakeholder cooperation to create other “centres of gravity” linked to environmental impact social impact we want and to increase our knowledge about and inclusion in other outside processes (not just IOMC).
- (c) Monitoring and evaluation, and communication about what the integrated approach is and what the value-added of participating in its implementation for national governments, private sector and CSOs.

E. Barriers

37. Key barriers to be considered are:

- (a) Certain key constituencies do not consider themselves implementers of the integrated approach. For example, some IOMC organisations seem originally to have it as a source of funding for their programmes. When no funding appeared, the integrated approach ceased to be relevant to them. Similarly, mindset shifts are going to be necessary to move from “grant recipient” to a “resource mobilisation” mentality in some national governments. Moreover, as new people enter into the chemicals and waste community, awareness about the integrated approach as a holistic umbrella is dissipating.
- (b) Some stakeholders hold the assumption that the integrated approach would stay static as it was originally formulated. In reality, the approach is evolving as it is practised. That is beneficial because it shows the governance realities the integrated approach is operating in and how the approach has to be adapted. Changing towards an iterative approach for the integrated approach might be a challenge however.
- (c) Austerity impacts are still being felt in financing flows.

VI. Recommendations

A. Main findings: Does the available evidence support the contribution narrative?

38. **Where intentions and directions were specific, the integrated approach is being implemented as intended and it is yielding results that are consistent with the contribution narrative proposed in Section II.B above.** Special Programme outcomes, such as they are after only three years of operations, can be attributed to the integrated approach. Contributions can be inferred for evolutions and outcomes on the GEF Chemicals and Waste Focal Area, but this requires further exploration given the perception of some stakeholders that the integrated approach has little to do with the GEF. Neither outcomes, nor the contributions to these by the integrated approach, can be sufficiently evaluated for mainstreaming and industry involvement.

39. **The basic idea underpinning integrated approach is correct and targets the very real and continuing challenge of adequate financing for sound management of chemicals and waste. However, it needs to be fully operationalised at national level.** The three components of the approach are the obvious pathways for achieving the intended outcomes on resource mobilisation and institutional strengthening. How to make the approach operational at national and subnational levels is the question to be addressed by future implementation of the integrated approach. There was a lot of goodwill and ownership for the integrated approach built through the consultative process on financing; this is dissipating in some cases because of lack of communication on the integrated approach and clear, ongoing demonstration of its value-add to developing country national governments, private sector and civil society groups.

40. **A more strategic and programmatic approach among all stakeholders on the implementation of the integrated approach could further enhance progress in certain areas of the integrated approach, as well as outcome and impact monitoring and assessment that could help with strategic decision making on future implementation.** There are two major issues in this regard: (i) the integrated approach is not clearly and consistently defined and used by all stakeholders as an approach; and (ii) because there is no dedicated programme on the integrated approach that defines expected outcomes and impacts and resources monitoring, progress is difficult to measure and evaluate.

B. Recommended actions for consideration

41. **Recommended action 1.** One stakeholder comments: “If the integrated approach could trigger specific action on including chemicals and waste in national UNDAFs, then no other approach is needed.” This is a good moment for action on this given the UN reform process, and the fact that BRS Conventions have already begun some activities in this regard. The UN Environment Programme, in cooperation with relevant IOMC organizations, through appropriate multi-stakeholder process, could:

(a) Formulate an approach on how the integrated approach whereby through its next iteration specific expected outcomes for mainstreaming are established for United Nations Development Assistance Frameworks.

(b) Review capacities and procedures required to achieve this outcome with all relevant stakeholders.

(c) Give guidelines to national governments on language to be used in mentioning and setting targets for sound management of chemicals and waste in UNDAFs

(d) Make a formal request to donors to make an overt signal that chemicals and waste are a fundable component of development plans in fora and language that does not violate country-driven process but does give support to line ministries responsible for chemicals and waste issues to approach national line ministries for planning and finance with requests to insert specific mention and targets for chemicals and waste.

(e) Choose a small number of influential national test cases and document the process and lessons learned carefully so that a procedure could be institutionalised thereafter for scaled implementation.

42. **Recommended action 2.** The UN Environment Programme could prepare an updated guidance on the integrated approach in recognition that the integrated approach is an evolving idea, including:

(a) Clarifying different possible co-financing modalities with all stakeholders for the next iteration and giving an explicit extended definition of elements of dedicated external financing that are implied in the current common usage of the integrated approach as a concept, but have not been established in normative or strategic mandates. For example, the Specific International Programme of the Minamata Convention, bilateral funding; particular forms of industry contributions, including in-

kind; financial and in-kind, from chemicals CSOs and other sectors than chemicals and waste, i.e. biodiversity conservation, health sectors.

(b) Guidelines for industry involvement, identifying particular opportunities where there is an economic case for participation of the industry in clean-up and other activities on sound management of chemicals and waste.

(c) Proposed solutions to address civil society financing concerns, for example, raising awareness and enhance capacity on accessing the GEF small grants programme; changing Special Programme grants to include the possibility of sub-grants to CSOs.

(d) Commission studies as background research to this action on:

(i) Establishing a baseline against which the next iteration of the integrated approach can be evaluated.

(ii) Market-based instruments for cost internalisation and incentives for sustainable consumption and production, particularly for green chemistry investments.

43. **Recommended action 3.** Establish a multi-stakeholder task force to define expected outcomes and the value-add of the integrated approach, and set standards and mechanisms for testing these.

44. **Recommended action 4.** Identify a clear hub for strategic and technical guidance to countries and other stakeholders on implementing the integrated approach to financing, with clearly defined execution roles and resources.

45. **Recommended action 5.** Re-frame the narrative around the integrated approach as a contribution to the 2030 Sustainable Development Agenda. The integrated approach fits strongly with approaches sought through the SDGs. The climate provided by the 2030 Agenda means now is the time where its full potential can be more fully developed and exploited. Supporting actions would include:

(a) Commission a study on chemicals and waste financing links across the SDGs

(b) Strengthen engagement at the High-Level Political Forum aiming to support the efforts of the recently established High Ambition Alliance on Chemicals and Waste.

(c) Secure a resolution for the above action under ICCM5.

46. **Recommended action 6.** Recognise the role of UN as intermediary in how financing flows may need to change and focus instead on strengthening the enabling conditions for increased sustainable and predictable finance to sound management of chemicals and waste through actions like:

(a) Convening stakeholders on UNDAFs and the chemicals and waste agenda

(b) Map current private sector partnerships with the UN and develop from that learning on how these are governed and how they function in practice

(c) Focus on brokering co-financing relationships between:

(i) Private sector and national governments, acting as verifier and third-party ethics safeguard;

(ii) Private sector and civil society groups, acting as verifier and third-party ethics safeguard;

(iii) Regional development banks and national governments on chemicals and waste infrastructure investments.

47. **Recommended action 7.** The SAICM secretariat has emerged as one key broker in the integrated approach through their explicit inclusion of the idea in its guidance to SAICM stakeholders on implementing the overall Strategic Approach. Review and assess a potential role for SAICM as a broker for implementation of the integrated approach in parallel with the intersessional process, including the technical capacity required to fulfil such a role.

48. **Recommended action 8.** Review reporting requirements and strengthen existing monitoring, evaluation and learning strategies and approaches for the implementation of the integrated approach in UN Environment Programme and the Chemicals and Waste Conventions. The changes in co-financing policy in GEF-7 is an opportunity in this regard.

APPENDIX 1: Evaluator's terms of reference

Terms of Reference

EVALUATION OF THE INTEGRATED APPROACH TO FINANCING SOUND MANAGEMENT OF CHEMICALS AND WASTE

Mission

History of the integrated approach to the financing of sound management of chemicals and waste. The integrated approach as adopted by UNEA can be found in document "Consultative process on financing options for chemicals and waste: implementation of Governing Council decisions SS.XI/8, 26/7 and SS.XII/4 : Report of the Executive Director: UNEP/GC.27/7".

Assignment mandate

The mandate for this assignment comes from Governing Council decision 27/12 and in particular paragraph 60 which states the following:

60. Requests the Executive Director to facilitate an evaluation of the implementation of the integrated approach, which should be done in cooperation with all relevant stakeholders and submit the evaluation, including recommendations, within six years for consideration by the Governing Council/Global Ministerial Environment Forum, the relevant COPs and ICCM5;

As GC/27 took place in 2013, the requirement is that the above report is submitted within six years, i.e. 2019 at UNEA4.

Objectives

The purpose of the evaluation is to:

- Provide further clarity, as needed, on the intended impacts the integrated approach as they were being implemented from 2014 to end 2018.
- Establish a baseline for 2013 and evaluate current implementation modalities and impacts, with evidentiary support from 2014 to end 2018.
- Provide input to integrated approach partners by identifying gaps and possible options for future implementation.
- Provide recommendations on how to further strengthen the integrated approach for enhanced impact at the global, regional and national level.

The primary end users of the evaluation are the United Nations Environment Assembly, United Nations Environment Programme, though all stakeholders in the integrated approach should find value in the analysis.

Main tasks

An independent external consultant will lead the evaluation under the overall guidance of the Chemicals and Health Branch, UN Environment Programme. The consultant will work with relevant stakeholders.

The evaluation will be based on evidence from written materials provided by the Chemicals and Health Branch and other stakeholders and interviews. Written materials will include the founding documents of the integrated approach, key partners at UN Environment Programme, SAICM Secretariat, GEF Secretariat, Special Programme staff, in the Chemicals and Waste related Conventions, in national governments and in civil society organisations. Other documents will be made available as requested.

It is anticipated that the evaluation will include interviews with UN Environment Programme staff, Chemicals and Waste related conventions secretariat staff, an ICCA representative and a civil society representative. The evaluator will, at his or her discretion, also conduct interviews with any available relevant stakeholder identified in the course of the assignment.

The evaluation is expected to begin in mid-January 2019 and conclude by 15 February 2019, at the latest. The main tasks include:

1. Carrying out and drafting the evaluation of the implementation of the integrated approach, which should be done in cooperation with all relevant stakeholders and submit the evaluation, including recommendations, within six years for consideration by the Governing Council/Global Ministerial Environment Forum, the relevant COPs and ICCM5.
2. Carrying out the necessary desk-based research relevant to the evaluation, including reviewing UNEA 2 report (attached) and input that is to be received from stakeholders in the implementation of the integrated approach (NB Information on the implementation of component on 'dedicated external financing', i.e. GEF and the Special Programme is easily available from the GEF Secretariat and from the Special Programme secretariat within UN Environment Chemicals and Health Branch).
3. Conducting telephone and in-person interviews.
4. Preparing and presenting recommendations for consideration at UNEA.
5. Facilitating a lessons learning discussion with the Chemicals and Health Branch and others.
6. Compile all documents used in the evaluation.

Expected Deliverables:

By 6 February: An appropriate evaluation framework give the context and purpose

On 8 February: A 10-12 page INF document for submission to UNEA4, with further detail in appendices as appropriate. At least 2 pages will contain recommendations for potential actions to improve the implementation of the integrated approach to financing in the chemicals and waste cluster.

On 8 February: A message to the defined stakeholder group to accompany the evaluation report send out, seeking feedback.

Before 15 February: Conduct any necessary follow up, including preparing a final document compilation that may be useful to the Chemicals and Health Branch and others in future evaluations of the integrated approach.

Scope:

Max. 10 days

APPENDIX 2: Methods, data sources and lessons learning procedures

The integrated approach is not a formal programme with specific goals, objectives, targets, agreed measurements, or monitoring and ongoing evaluation procedures to rely upon for a full evaluation. As such, the independent consultant applied the following approach:

- 1) Establish an evaluation framework and an approximate baseline for the integrated approach in 2013, using the following documents:
 - The original decision: UNEP/GC.27/17: Decision 27/12: Chemicals and waste management, VIII, para.18; and its supporting documents:
 - Consultative process on financing options for chemicals and waste: final report on the implementation of Governing Council decisions SS.XI/8 and 26/7. UNEP/GCSS.XII/8.
 - Documents on mainstreaming provided by UN Environment Programme staff.
- 2) Conduct a desktop review of the following documents to review reported implementation modalities and activities in mainstreaming, industry involvement and/or dedicated external financing:
 - Formal progress reports
 - Relevant project documents, progress reports and final reports for GEF, Special Programme, Quick Start Programme (until 2015) strategies, project portfolios and selected example projects.
 - Earlier evaluations for SAICM, GEF co-financing Quickstart Programme.
- 3) Elicit stakeholder perspectives through:
 - 9 stakeholder interviews using the evaluation framework as the guiding set of questions for a semi-structured discussion with staff in UN Environment Programme, SAICM secretariat; GEF (Chemicals and Waste), Special Programme; BRS Conventions staff; an ICCA representative; and an IPEN representative.
 - In collaboration with UN Environment Programme staff, a call for written perspectives on this evaluation report was requested of stakeholders.
- 4) Facilitated a facilitated “lessons learning” discussion with UN Environment Programme, SAICM and Special Programme representatives. Lesson learned processes are best guided by a set of structured questions to elicit the most critical lessons and generate learning that should be applicable in more than a singular instance. The session plan for this discussion is shared below:

Lessons learning on the integrated approach to financing sound management of chemicals and waste

7 February 2019

Introduction

- Purpose: Lessons learning on the implementation of the integrated approach to financing sound management of chemicals and waste. Why do it in a group?
- What and who is actually being evaluated...
- Roles for each of us for the next 1.5 hours

Harvesting lessons

Thinking about how you understand the integrated approach and how you observe it being used:

- *Step 1: Think of one contribution it SHOULD be making to:*
 - Increasing finance allocations to sound management of chemicals and waste
 - Strengthening the institutions for sound management of chemicals and waste
- *Step 2: Thinking of the specific contribution you have in mind:*
 - What is working? Write 3 responses on separate post-its
 - What is not working? Write 3 responses on separate post-its
 - Synthesis exercise: “Snap!”
 - Keep adding post-its; cluster observations
- *Step 3: Roundtable*
 - What steps are being taken to address some challenges raised?
 - What barriers are blocking progress?

Open reflection

- What is your major take away lesson?
- What would have to change in order to show that this lesson has been learned?

APPENDIX 3: Implementation examples

Example 1: BRS Conventions → welcomes and takes note of the Governing Council Decision 27/7 → invites implementation of the integrated approach at the BRS Second simultaneous extraordinary meetings 28 April-10 May 2013.

The near collapse of the Stockholm Convention in 2009 was one trigger for the UN Environment Programme consultative process on finance for sound management of chemicals and waste. The integrated approach, at that time, was seen as a way of taking an approach that was going nowhere and put it into a larger approach. It was promising as a solution for a specific problem that was being experienced in the conventions; and this led to the BRS Conventions welcoming the integrated approach and “inviting governments, relevant organizations and entities and other stakeholders to apply an integrated approach to financing sound management of chemicals and waste”¹⁴. In terms of the outcomes today, there is a perception that this invitation had no real impact on financing actions at national level. Implementation of the integrated approach happens within the BRS Convention, i.e. in their action to increase visibility and impact for the chemicals and waste focal area within GEF, not the actual national governments.

Example 2: SAICM Overall Orientation and Guidance for Achieving the 2020 Goal voluntary tool¹⁵ → invites implementation of the integrated approach specific → gives guidance to SAICM stakeholders on mainstreaming, industry involvement and seeking dedicated external financing.

Paragraphs 83.-87 in SAICM/OEWG.2/13* illustrates how the integrated approach is being used to guide action by SAICM Stakeholders at regional, national and subnational levels. It is difficult to know what is actually happening on the ground but the clear intention is to support national efforts on mainstreaming and institutional strengthening outcomes, as well as releasing new financing.¹⁶

Example 3: BRS Conventions → cites the Governing Council Decision 27/7 in 2013 → invitation to revise the GEF Chemicals and waste focal area.

The GEF was named explicitly as a means of implementing the integrated approach in the Governing Council decision 27/7 in the expected action (d) leading to a broader treatment of financing sound management of chemicals and waste. The BRS Conventions specifically invited the GEF, in the context of preparing for their 6th replenishment process [hereafter: GEF-6] to *revise its focal area structure and strategy in order to address the chemicals and waste agenda, and consider ways of further strengthening its relations with the conventions it serves as a financial mechanism*.¹⁷ However, stakeholders suggest that the cumulative effect of SAICM and then the later Minamata Convention being included under the GEF mechanism that actually triggered the evolution in the GEF Chemicals and Waste focal area structure and strategy.

Example 4: Governing Council Decision 27/7 → UNEA.1 Resolution 1/5 → Establishment of the Special Programme.

The establishment of the Special Programme is a direct result of the integrated approach. The Special Programme was established by UNEA 1/5 and this resolution contains a reference to the integrated approach. The Special Programme is intended to support institutional strengthening at the national level for implementation of the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury and the Strategic Approach, “including through mainstreaming and the financing of all aspects of chemicals and waste management”¹⁸.

Example 5: Special Programme → Benin: Legal and Institutional Strengthening for the Sound Management of Chemicals¹⁹ → Strengthened capacity in project proposal development and resource mobilisation.

This project, launched in 2017, aims to strengthen Benin’s legal, regulatory and institutional frameworks ensure the sound management of chemicals and their waste and meet its obligations under the Stockholm and Basel Conventions. US\$ 250,000 was matched with US\$62,000 from the Government of Benin. Overall, the project progressed well, though with some delays in the adoption of new legislation and some stakeholder resistance. Having successfully received funds from the pilot round of applications from the Special Programme, Benin used their new capacity to draft a project proposal under the Minamata Convention Specific International Programme [SIP] which was also

¹⁴ UNEP/FAO/CHW/RC/POPS/EXCOPS.2/INF/20, Section VIII. Consultative process on financing options for chemicals and waste, para. 43-57.

¹⁵ <http://www.saicm.org/Portals/12/Documents/OOG%20document%20English.pdf>, last accessed 8 February 2019

¹⁶ Requests have been made by SAICM secretariat and the UN Environment Programme Chemicals and Health branch to governments and others to report on their implementation of the integrated approach in early 2019.

¹⁷ Ibid., para. 54

¹⁸ SAICM/OEWG.2/13, para 5.

¹⁹ <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/special-programme/special-programme-projects-database-1>, last accessed 8 February 2019

approved for funding. A quote the Benin focal point: "...under this last [SIP] project, Benin used the capacities acquired during the drafting of the special programme."

Example 6: GEF-6 (Chemicals and Waste Focal Area)→ SAICM Secretariat coordination role in a new global project on emerging chemical policy issues of concern²⁰ → regional approach with 40 countries.

The GEF Secretariat approached the SAICM Secretariat in 2016 expressing a desire for SAICM to take on a coordinator role for a global project on lead in paint to evolve away from a modality of individual small projects in separate countries and towards a more regional and scaled approach. In 2017, a project was launched to accelerate adoption of national and value chain initiatives to control Emerging Policy Issues (EPIs), and contribute to the 2020 SAICM goal and 2030 Agenda for Sustainable Development. The GEF Project Grant of US\$ 8,190,000 is matched with US\$ 21,312,903 of co-financing. SAICM secretariat acts a broker for a joint implementation by 40 countries, enhancing their regional networks, facilitating knowledge exchange and efficient use of technical capacity.

Example 7: Regional implementation of sound management of chemicals and waste→ requests for additional guidance and technical support on financing²¹.

In 2014: African region challenges: Financing was a particular challenge, including with regard to how to involve industry and how to access external funding (para. 20). Asia-Pacific regional meeting had also resulted in the conclusion that limited financial resources and financing mechanisms, a lack of information exchange and a lack of appropriate technical support were significant challenges to achieving the 2020 sound chemicals management goal (para. 21). Regional focal point for Central and Eastern Europe quoted the integrated approach in requesting detailed user-friendly information regarding the procedures for applying for GEF funds for projects in the chemicals and waste focal area as well funds from the special programme. (para. 22). Noting some items that had not been included on the agenda for the current meeting, the Latin American and Caribbean region underscored the need for the Working Group to discuss the financial status of the Strategic Approach and the availability of funds and appropriate financing mechanisms. He said that the overall orientation and guidance document should include financing as a central item over and above the special programme and GEF and should consider whether the Strategic Approach would have financing beyond 2020. (para. 23)

Example 8: Special programme and GEF, BRS/Minamata Conventions joint review procedure→ Reduced duplication

In October 2017, a country project under review at the Minamata Convention SIP programme. There were parts of the project that was ideal for SIP funding; other parts were more suitable under the Special Programme. The prevention of duplication was a successful outcome – an outcome this particular stakeholder attributes to the implementation of the integrated approach as a guiding principle. The conversation between the secretariats, institution-to-institution, has been enabled by the way in which the various financing mechanisms have been designed through the influence of the integrated approach, even if this is not directly viewed or felt by all other stakeholders.

Example 9: Special programme→ Interministerial cooperation and co-financing in Viet Nam → Mainstreaming sound management of chemicals and waste

The Special Programme funds a project on 'Strengthening national capacity in sound chemical and waste management for the implementation of the Stockholm, Basel, Rotterdam, Minamata Conventions, SAICM in Viet Nam' that may be a model for the future. It enhances collaboration between the Ministry of Natural Resources and Environment and the Ministry of Industry and Trade to ensure national legislation and institutions are strengthened for implementation of the Chemicals and Waste Conventions. The SP Trust Fund contribution is US\$493,500, which has catalysed US\$656,500 in co-financing for implementing this 2-year project.²²

Example 10: Special programme → Argentina → new Chemicals Directorate and private sector co-financing arrangements outcomes.

The main objective of this project is to generate capacity in the national environmental authority to promote the effective implementation of the Multilateral Environmental Agreements on chemicals and waste and the Strategic Approach for International Chemicals Management considering national needs and priorities and New Emerging Issues. The Special Programme Trust Fund contribution of USD 245,564 was complemented with USD 395,000 of national government and private financing. A second directorate of Substances and Chemical Products was successfully established in March 2018 and has so far been working in with two main action lines: fulfilling international commitments by identifying weaknesses for meeting its obligations under the Basel, Stockholm, Rotterdam and Minamata Conventions; fostering involvement of other Ministries with clear roles and responsibilities; and designing and systematizing processes. In addition, the project earned the support of several governmental and

²⁰ <https://www.thegef.org/project/global-best-practices-emerging-chemical-policy-issues-concern-under-strategic-approach>, last accessed 8 February 2019

²¹ 2014 / SAICM/OEWG.2/13

²² <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/special-programme/special-programme-projects-database-24>

non-governmental actors such as industrial associations, civil society organizations, scientific-academic organizations as well as the Ministries of Production, International Affairs, Work and Health, amongst others. Furthermore, it has established the framework necessary to gain access to financial and other resources for the implementation of instruments available to the Conventions parties.

Example 11: GEF Gold Program²³

The GEF Council approved the global program to address "The Global Opportunities for Long-term Development "GOLD" in the Artisanal Scale Gold Mining (ASGM) sector, including provisions to address mercury pollution from the sector in 2016. The GEF GOLD program has strong private sector engagement, including major jewelers, electronics manufacturers, gold refiners, and potentially commercial banks. The project was launched in 2017 with a US\$ 32,620,000 GEF project grant leveraging US\$ 135,174,956 in co-financing and is implemented by Burkina Faso, Colombia, Guyana, Indonesia, Kenya, Mongolia, Peru, and the Philippines.

²³ <https://www.thegef.org/project/global-opportunities-long-term-development-asgm-sector-gef-gold>, last accessed 10 February 2019.

APPENDIX 4: Evaluator's extended notes on outcome and impact definition for the integrated approach

These notes are shared here as an incomplete starting point for future discussions on performance and impact monitoring, and for future evaluative procedures, for the integrated approach.

In preparing the contribution narrative and evaluation framework for the integrated approach, the evaluator prepared notes based on a reading of the founding documents and discussions with interviewed stakeholders on what might be used to measure mobilisation of financial or in-kind resources, industry involvement and dedicated external financing outcomes and potential impacts. On the ground implementation of new projects is part of the implied impact of the integrated approach but since it was not stated explicitly it was considered outside of the scope of this particular evaluation. However, in future it may gain in importance if the next iteration of the integrated approach focusses on national and sub-national implementation. As such it is included in the below framework.

A multi-stakeholder and synergised implementation of the integrated approach of mainstreaming, industry involvement and dedicated external financing will provide the sufficient enabling conditions for effective financing at different levels and for the long term because its components are used synergistically and by different stakeholders to trigger change in funding priority, approach, policy, practices or other behaviours that could reasonably be expected to result in:

1) Increased mobilisation of financial or in-kind resources dedicated specifically to sound management of chemicals and waste for the long-term and at all levels that could result from:

A. Actions to realise mainstreaming of and institutional strengthening for sound management of chemicals and waste, which establishes new stated objectives in key national strategies and therefore enables national budget allocations to chemicals safety and sound management of chemicals and waste in the country, supported with contributions from (but not limited to):

1. Development assistance programmes / bilateral agreements under general budget support approaches or other that results in resource mobilization for sound management of chemicals and waste in recipient countries;
2. Synergy funding from inter-ministerial action on and joint financing of sound chemicals and waste management activities in-country
3. Other co-financing partnerships with the private sector, research educations, and civil society groups resulting in financial and/or in-kind contributions that could include:
 - a) Direct implementation of sound management of chemicals and waste practices in private sector operations that reduces costs in national government budgets
 - b) Direct action on clean-up that reduces costs in national government budgets
 - c) In-kind services
 - d) Education and training
 - e) Research
 - f) ?

B. New forms of industry involvement in (but not limited to):

1. Implementation of legislation and regulations for sound management of chemicals and waste, taxes, rebates (cost sharing of implementation costs, internalisation of previously external costs; responsible services provision)
2. Dialogue (Financing / co-financing of events)
3. Capacity development (Financing / co-financing of events)
4. Development of policies (cost-sharing for research; in-kind capacity contributions)
5. New partnerships (with co-financing arrangements)
6. New voluntary action for sound management of chemicals and waste (Cost sharing or internalisation implementation costs)
7. Investment in green chemistry for design, production and use of products (new investment)
8. ?

C. Allocations of dedicated external finance that result in new financial flows emerging, that are chemicals and waste-specific, from different sources external to national budgets of countries implementing sound management of chemicals and waste initiatives, including, but not limited to:

1. Non-Chemicals and Waste international agencies co-financing
2. Investment by regional development banks
3. New access to credit
4. ?

- 2) **Institutional strengthening** for implementation of sound management of chemicals and waste at regional, national and sub-national governmental levels, in private sector operations and in civil society actions, **as a result of mainstreaming, industry involvement and/or dedicated external finance efforts**, including but not limited to:
- A. Ratification of conventions.
 - B. National focal points , national units.
 - C. National plans and indicators being established or updated. New inter-ministerial national strategies, legislation, regulations for the sound management of chemicals and waste, with budget and capacity that are supported by a diversity of sources (as per the outcome on finance mobilization above).
 - D. Reporting mechanisms being established
 - E. New and measurable capacities
 - F. New synergies [Example: New legislation leading to new collaborations and new financial flows]
 - G. New awareness, culture on and around the integrated approach to financing the sound management of chemicals and waste in the chemicals and waste communities and beyond in key constituencies that are important for the chemicals and waste communities
 - H. ?
- 3) **Increased on-the-ground implementation** catalyzed by but also independent of mainstreaming, industry involvement, and/or dedicated external financing for institutional strengthening, as well as other project-based activities, **for “long term and at all levels”, including but not limited to:**
- A. New financing collaborations and activities (projects, networks, initiatives) dedicated to the sound management of chemicals and waste for the long term
 - B. Companies instituting policies and procedures for chemical safety and sound management of chemicals and waste
 - C. Business creation around responsible chemical and waste management
 - D. National education, training and research programmes established and resourced through local education institutions
 - E. ?

APPENDIX 5: Extended note on main findings

Where intentions and directions were specific, the integrated approach is being implemented as intended and it is yielding some results that are consistent with the contribution narrative proposed in Section II.B above.

Special Programme outcomes, such as they are after only three years of operations, can be attributed to the integrated approach. Contributions can be inferred for evolutions and outcomes on the GEF Chemicals and Waste Focal Area, but this issue further exploration given the perception of some stakeholders that the integrated approach has little to do with the GEF. Neither outcomes, nor the contributions to these by the integrated approach, can be evaluated for mainstreaming and industry involvement.

- The Special Programme was not the focus of this evaluation and will need its own dedicated evaluation process at an appropriate time.
- While the BRS Conventions direction to the GEF²⁴ undoubtedly began a process of consolidation and integration on financing chemicals and waste, is difficult to evaluate the extent to which (if at all) the integrated approach might be contributing to the continued progression towards a more integrated approach on chemicals and waste at GEF. The GEF secretariat are guided by their own strategy at this point and do not lean on the integrated approach to do what they are doing.
- Some definitions and prescriptions for dedicated external finance are overly narrow in the written decisions, even if the original spirit seems to have been always to be open and inclusive as to what this strand of the integrated approach could look like. Moreover, the original framework was open and flexible regarding areas like mainstreaming, industry involvement and other instrumental actions towards sustainable and predictable financing. This has left a lot of latent potential in the integrated approach unexplored.

The basic idea underpinning integrated approach is correct and targets the very real and continuing problem of adequate financing for sound management of chemicals and waste. However, it needs to be operationalised at national level. The three components of the approach are the obvious pathways for achieving the intended outcomes on resource mobilisation and institutional strengthening. How to make the approach operational at national and subnational levels is the question to be addressed by future implementation of the integrated approach.

- The integrated approach is providing a common language and conceptual reference point in formulating new programmes and projects for some people. It served an important purpose even in its formulation in that it gave hope and a new pathway to the chemicals and waste community at a difficult period for the Stockholm Convention. For those who were involved in the consultative process, the integrated approach remains important in their activities. For others, different factors have perhaps been more directly influential, even if the integrated approach process may have been a distant trigger for those factors.
- There was a lot of goodwill and ownership for the integrated approach built through the consultative process on financing; this is dissipating somewhat because of lack of communication on the integrated approach and clear, ongoing demonstration of its value-add to developing country national governments, private sector and civil society groups.

A more strategic and programmatic approach by all stakeholders is needed on the integrated approach to further progress in certain areas, as well as outcome and impact monitoring and assessment that could help with strategic decision making on future implementation. i) the integrated approach is not clearly and consistently defined and used by all stakeholders as an approach; and (ii) because there is no dedicated programme on the integrated approach that defines expected outcomes and impacts and resources monitoring, progress is difficult to measure and evaluate.

- Currently, there are no transparent measurements on financial flows to the sound management of chemicals and waste, beyond the GEF and Special Programme. What bilateral funds are being transferred really? What industry-government partnerships are being formed? What co-financing outcomes are being leveraged from mainstreaming
- Secondly, there is no consensus about what the measure of impact should be for increased mobilisation of financial and in-kind resources, and institutional strengthening; on implementation of sound management and chemicals and waste and intended environmental, social and economic outcomes.



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Strategic Approach to International Chemicals Management

Open-ended Working Group of the International Conference on Chemicals Management

Third meeting

Montevideo, 2–4 April 2019

Item 4(e) of the provisional agenda*

**Progress towards the achievement of the 2020 overall
objective of the sound management of chemicals:**

Financing of the Strategic Approach

Activities of the Special Programme to support institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm conventions, the Minamata Convention on Mercury and the Strategic Approach to International Chemicals Management

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the United Nations Environment Programme related to the activities of the Special Programme to support institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm conventions, the Minamata Convention on Mercury, and the Strategic Approach to International Chemicals Management. The report is presented in the annex as received by the secretariat and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Activities of the Special Programme to support institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm conventions, the Minamata Convention on Mercury and the Strategic Approach to International Chemicals Management

I. Introduction

1. With the view to addressing the increased need for sustainable, predictable, adequate and accessible financing for the chemicals and waste agenda, the Executive Director of the United Nations Environment Programme (UNEP) proposed the establishment of an integrated approach to financing the sound management of chemicals and waste to the Governing Council of the United Nations Environment Programme at its twenty-seventh session, in February 2013.
2. The Governing Council, in its decision 27/12¹, section VIII, welcomed the integrated approach to address the financing of the sound management of chemicals and wastes, and underscored that the three components of the integrated approach: mainstreaming, industry involvement and dedicated external finance were mutually reinforcing and were all important for the financing of sound management of chemicals and wastes.
3. Furthermore, the United Nations Environment Assembly of the United Nations Environment Programme (UNEA), in its resolution 1/5², section II, also welcomed the integrated approach to the financing of chemicals and waste management and adopted the terms of reference for a special programme, to be funded by voluntary contributions, to support institutional strengthening³ at the national level to enhance the implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention on Mercury and the Strategic Approach to International Chemicals Management (SAICM).
4. The Special Programme was subsequently established and is part of subprogramme 5, on chemicals, waste and air quality, within the UNEP programme of work.
5. The objective of the Special Programme is to support country-driven institutional strengthening at the national level, in the context of the integrated approach to address the financing of the sound management of chemicals and wastes, taking into account the national development strategies, plans and priorities of each country, to increase sustainable public institutional capacity for the sound management of chemicals and wastes throughout their life cycle. The Special Programme is one of two complementary elements of dedicated external financing under the integrated approach, with the Global Environment Facility (GEF) being the further element.
6. The terms of reference of the Special Programme stipulate eligibility for support from the Programme as follows:
 - (a) Support from the Special Programme will be available for developing countries, taking into account the special needs of least developed countries and small island developing states, and for countries with economies in transition, with priority given to those with least capacity;
 - (b) Applicants will be eligible if they are party to any one of the relevant conventions or have demonstrated that they are in the process of preparing for ratification of any one of the conventions; and

¹ Available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/12221/Governing%20Council%20Decision%2027-2.pdf?sequence=1&isAllowed=y>

² Available at <http://wedocs.unep.org/bitstream/handle/20.500.11822/17285/K1402364.pdf?sequence=3&isAllowed=y>

³ For the purposes of the Special Programme, institutional strengthening is defined as enhancing the sustainable institutional capacity of Governments to develop, adopt, monitor and enforce policy, legislation and regulation, as well as to gain access to financial and other resources for effective frameworks for the implementation of the Instruments for the sound management of chemicals and wastes throughout their life cycle.

- (c) Applications are to include identification of the associated domestic measures to be taken to ensure that the national institutional capacity supported by the Special Programme is sustainable in the long term.
7. The terms of reference also stipulate the following operational arrangements:
- (a) The Special Programme will receive applications directly from national Governments;
- (b) Applications should be outlined within the context of an overall country approach to strengthening institutional capacity;
- (c) Applications should contain proposed measures and performance targets and information relating to long-term sustainability;
- (d) Cumulative allocations to a country should be decided by the Executive Board, based on the contributions received and the needs expressed in the applications submitted. Of that total, an amount not exceeding 13 per cent may be retained for administrative purposes;
- (e) Beneficiary countries will contribute resources equal to the value of at least 25 per cent of the total allocation. The Executive Board may reduce that percentage, commensurate with consideration of the specific national circumstances, capacity constraints, gaps and needs of the applicant; and
- (f) Beneficiary countries are to submit annual reports on progress achieved; a final report and financial audit, including a full accounting of funds used and an evaluation of outcomes, as well as evidence of whether performance targets have been met, are to be submitted upon completion of each project.
8. Furthermore, the terms of reference provide information regarding the duration of the Special Programme, which will be open to receive voluntary contributions and applications for support for seven years from the date it is established⁴. On the basis of a satisfactory review and evaluation, and subject to a recommendation from the Executive Board to the United Nations Environment Assembly, the Special Programme may be eligible for a one-time extension, not to exceed an additional five years. Special Programme funds may be disbursed for a maximum of 10 years from the date the Programme is established, or eight years from the date it is extended, if applicable, at which point the Programme will complete its operations and close.
9. The present document provides information on activities of the Special Programme to date.

II. Governance of the Special Programme

10. The Executive Board is the decision-making body overseeing the Special Programme with the support of the Secretariat. The term of its representatives is in a two-year rotation. The composition of the Executive Board reflects a balance between donors and recipients as follows:
- (a) Four representatives of recipient countries, reflecting equitable, geographical representation, drawn from the following United Nations regions: Africa, Asia-Pacific, Central and Eastern Europe, and Latin America and the Caribbean
- (b) One representative from a least developed country or a small island developing State on a rotational basis;
- (c) Five donor representatives, which are not also recipient countries.
11. The countries that are serving on the Executive Board during its 2018-2020 term are:
- (a) Zimbabwe representing Africa,
- (b) India representing Asia and Pacific,
- (c) Former Yugoslav Republic of Macedonia representing Central and Eastern Europe,
- (d) Cuba representing Latin America and the Caribbean,
- (e) Bahrain representing small island developing States.
12. The donor representatives on the Executive Board are: the European Union, Germany, The Netherlands, Sweden and the United States of America.

⁴ The Special Programme was established in September 2015, at the same time as the establishment of the Special Programme Trust Fund.

13. At their first meeting held in January 2019 in Geneva, Switzerland, the Group elected Mr. Clarence Matewe (Zimbabwe), representing recipient countries, and Ms. Sofia Tingstorp (Sweden), representing donor countries, as co-chairs of the Executive Board.

III. Meetings of the Executive Board

A. First meeting of the Executive Board

14. At its first meeting, held from 2 to 3 February 2016 in Geneva Switzerland⁵, the Executive Board reached an agreement on the Rules of Procedure for the operations of the Executive Board of the Special Programme, the application guidelines, and application forms.
15. The Executive Board also agreed to launch the first round of applications in April 2016.

B. Second meeting of the Executive Board

16. The first round of applications for funding from the Special Programme was launched on 4 April 2016. The deadline for the submission of applications to the Secretariat was 4 July 2016. Following the application deadline, the Secretariat received 54 applications from 45 countries.
17. The second meeting of the Executive Board was held from 11 to 13 October 2016 in Bangkok, Thailand⁶. The meeting was attended by 10 of the 10 Executive Board members and represented quorum for decision making in accordance with Rule 17 of the rules of procedure for the Executive Board of the Special Programme.
18. The main objective of the meeting was to review the 42 eligible and complete applications submitted for the first and pilot round of applications.
19. The Executive Board approved projects for the first and pilot round of applications, as outlined in table 1 of the appendix, amounting to US\$ 1.75 million, taking into consideration, regional balance and the special needs of least developed countries and small island developing States.
20. The Board agreed that the second round of applications would be launched in February 2017.

C. Third meeting of the Executive Board

21. The second round of applications for funding from the Special Programme was launched on 22 February 2017. The deadline for the submission of applications to the Secretariat was 20 June 2017. Following the application deadline, the Secretariat received 43 applications from 37 countries.
22. The third meeting of the Executive Board was held from 2 to 3 December 2017 in Nairobi, Kenya⁷. The meeting was attended by 8 of the 10 Executive Board members and represented quorum for decision making in accordance with Rule 17 of the rules of procedure for the Executive Board of the Special Programme.
23. The Executive Board reviewed each of the applications submitted and approved 17 projects, as outlined in table 2 of the appendix, amounting to US\$ 5,096,735, taking into consideration regional balance and the special needs of least developed countries and small island developing States.
24. It was also decided that projects that were not approved during the second round would be invited to resubmit their application to the third and subsequent rounds of applications.
25. In addition, a communications strategy and a resource mobilization strategy were considered and endorsed by the Executive Board during its third meeting. The Executive Board noted that such strategies would allow the Special Programme to attract well-developed applications and donors in a competitive environment.
26. Furthermore, the Executive Board agreed that the third round of applications would be launched in early 2018.

⁵ The report of the first meeting of the Executive Board is available at https://wedocs.unep.org/bitstream/handle/20.500.11822/22904/Special%20Programme%201st%20ExecutiveBoard_meeting_Report.pdf?sequence=1&isAllowed=y

⁶ The report of the second meeting of the Executive Board is available at http://wedocs.unep.org/bitstream/handle/20.500.11822/17014/2nd_EBMR_Oct2016_advance_copy.pdf?sequence=1&isAllowed=y

⁷ The report of the third meeting of the Executive Board is available at <https://wedocs.unep.org/bitstream/handle/20.500.11822/27357/boardRep.pdf?sequence=1&isAllowed=y>

D. Fourth meeting of the Executive Board

27. The third round of applications for funding from the Special Programme was launched on 23 February 2018. The deadline for the submission of applications to the Secretariat was 21 June 2018. Following the application deadline, the Secretariat received 37 applications, from 34 countries.

28. The fourth meeting of the Executive Board was held from 29 to January 2019 in Geneva, Switzerland⁸. The meeting was attended by 9 of the 10 Executive Board members and represented quorum for decision making in accordance with Rule 17 of the rules of procedure for the Executive Board of the Special Programme.

29. The Executive Board approved 18 projects amounting to US\$ 4,703,849. The approved projects were selected taking into account the project's merits, regional balance and priority to countries with least capacity, taking into account the special needs of least developing countries and small island developing States, as outlined in table 3 of the appendix.

30. It was also decided that projects that were not approved during the third round would be invited to resubmit their application to the fourth and subsequent rounds of applications.

31. In addition, the Executive Board requested the Secretariat to initiate the midterm evaluation for the Special Programme internal UNEP project in early April 2019.

32. With regards to resource mobilization, the Executive Board requested the Secretariat to develop a focused action plan that outlines activities and necessary resources to showcase the Special Programme's priorities over the next two years.

33. In addition, The Executive Board approved the proposed branding and visual identity of the Special Programme, and requested the Secretariat to use them, as appropriate. It was also agreed that relevant slogans will be included alongside the logo to highlight key aspects of the Special Programme, such as institutional strengthening. The Board also emphasised the importance of widely using the approved branding and visual identity of the Special Programme in order to facilitate the Programme's visibility to both donors and recipient countries.

34. The Board also welcomed the proposed improvements to the Special Programme project database to include a search engine that facilitates the retrieval of information and the development of the application guidelines and e-learning modules and hoped that they will facilitate the application process and contribute to the improvement of the quality of the applications submitted.

35. Finally, the Board welcomed the proposed activities that will be implemented under Phase II of the communications strategy.

IV. Status of the Special Programme Trust Fund

36. The generous contributions of donors to the Special Programme trust fund and its operations continue to be greatly appreciated by the recipient countries.

37. An update of donor contributions since the establishment of the Special Programme Trust Fund in September 2015 is shown in table 1 below. In addition, some donors provided financial resources for the operations of the Special Programme (for example, convening of the Executive Board meetings, outreach and communications) and the Special Programme Secretariat. Three new positions (P3 Programme Officer, P2 Associate Programme Officer and G4 Programme Assistant) within the Secretariat were filled in 2017 and 2018.

⁸ The report of the fourth meeting of the Executive Board is available at <https://www.unenvironment.org/events/working-group-meeting/fourth-meeting-executive-board-special-programme>

Table

1

Contributions and pledges received 2015 – 2018 (all amounts in US\$ as of 21 December 2018)

Donor	Total amount pledged*/contributed
<i>European Union</i>	11 676 996
<i>European Union (top-up)*</i>	7 954 660
<i>Sweden</i>	2 927 456
<i>United States</i>	1 250 000
<i>Norway</i>	863,098
<i>Germany*</i>	618 812
<i>Finland</i>	219 954
<i>The Netherlands</i>	248 006
<i>Austria</i>	65 923
<i>Denmark</i>	31 764
<i>Belgium*</i>	39 800
Total contributions and pledges**	25,896,460

*Pledge amounts will be adjusted with the exchange rate on the day of receipt

38. In line with the Special Programme terms of reference, all signatories and parties to the conventions and other Governments with the capacity to do so, as well as from the private sector, including industry, foundations and non-governmental organizations and other stakeholders, are encouraged to contribute to the Special Programme Trust Fund.

IV. Status of the Implementation of Special Programme Funded Projects

A. First and pilot round of applications

39. At its second meeting, the Executive Board approved seven projects in Argentina, Benin, the Dominican Republic, Iraq, the Kyrgyz Republic, Tanzania, and Ukraine following the first and pilot round of applications for funding from the Special Programme.

40. An overview of the projects and updates on their status of implementation and lessons learned is presented below.

Argentina

41. As a regional leader in the development and implementation of multilateral environmental agreements on chemicals and waste, Argentina aspires to replicate the situation locally. Under current institutional arrangements, efficient coordination to manage chemicals and waste falls short of the government's expectations. Argentina is a Party to the Basel, Rotterdam, and Stockholm conventions, in addition to the Minamata Convention. However, the provisions of each convention are managed independently, resulting in an overall lack of systematic and comprehensive mechanisms to establish cooperation, coordination and information exchange.

42. With funding from UN Environment's Special Programme on Institutional Strengthening for Chemicals and Waste Management, a new directorate was created in 2017 to ensure that there is adequate personnel and infrastructure to implement the legal and technical commitments arising from the relevant conventions related to chemicals and waste management to which Argentina is a Party. The Directorate of Chemicals and Waste is tasked with promoting cooperation and coordination between the stakeholders, as well as developing a training plan, evaluating Argentina's participation in the multilateral environmental agreements and the Strategic Approach to International Chemicals Management (SAICM), and designing strategies to combat new and emerging challenges. With a newly consolidated structure, Argentina will be able to build its capacity to manage chemicals and waste in a cost-effective and efficient manner.

43. In addition to the Special Programme, the project is also supported by the United Nations Development Programme Country Office, the Basel Convention Regional Centre for Training and

Technology Transfer for South America, and Argentina's General Directorate of Environmental Affairs, Ministry of Foreign Affairs and Worship.

44. As of October 2018, the project achieved several positive results. The Directorate of Substances and Chemical Products was successfully established in March 2018 and has so far been working in with two main action lines: fulfilling international commitments by identifying weaknesses for achieving operativity for Basel, Stockholm, Rotterdam and Minamata Conventions; fostering involvement of other Ministries with clear roles and responsibilities; and designing and systematizing processes. Through this work, the Directorate achieved a sound management of chemicals by strengthening national capacities, developing relevant legislation and public policies aiming towards a correct and comprehensive management of hazardous substances and special waste.

45. In addition, the Special Programme project funded by UN Environment also earned the support of several governmental and non-governmental actors such as industrial associations, civil society organizations, scientific-academic organizations as well as the Ministries of Production, International Affairs, Work and Health, amongst others.

46. The Directorate identified the following challenges: limited access to information related to chemicals production, stock and commerce amongst private and public actors, lack of motivation for certain stakeholders to participate in national and international goals, a weak image of chemicals in the public agenda and general public interest.

47. With this in mind, the Special Programme has set up its work agenda for the next steps. It has designed actions to generate new mechanisms to systematize information and develop new, cost-effective and efficient mechanisms to further streamline interdisciplinary and interjurisdictional cooperation of all relevant partners and stakeholders. Furthermore, it has established the framework necessary to gain access to financial and other resources for the implementation of instruments available to the Conventions parties.

Benin

48. Benin is eager to put behind it a past of chemical mismanagement. Numerous cases of toxic poisoning and pesticide-related deaths have been reported since the 1990s. At its peak, a study carried out from January 2001 to July 2003 by PAN UK in cooperation with PAN Africa and the Benin Organization for the Promotion of Organic Agriculture (OBEPAB), reported 347 cases of toxic poisoning due to pesticides, of which 53 resulted in death. Benin has since become a Party to the Basel, Rotterdam, Stockholm, and Minamata Conventions and has worked to protect both its people and the environment. However, as one of the world's least developed countries, Benin faces multiple challenges. Inadequate institutional capacity, technological barriers, and economic problems continue to threaten Benin's ability to manage chemicals, in particular pesticides, and waste.

49. Funded by the Special Programme Trust Fund in its inaugural round of applications, a project to support legal and institutional capacity was launched in 2017 to strengthen Benin's will and ability to address these issues. Benin is working to establish a database on chemical substances and systematic control procedure of chemicals and waste, update its chemicals' monitoring system, and increase public and stakeholder awareness of chemical-related risks. Furthermore, the government is working to develop regulatory measures on imported chemicals, strengthen national legislative frameworks on waste management, and establish national budget provisions for the implementation of chemical management policies. These actions will help Benin implement its obligations towards chemicals-related multilateral environmental agreements and strengthen its ability to address the pressing challenge it faces in managing chemical pesticides.

50. As of October 2018, a deep scanning of actual legislative, regulatory and institutional framework has been carried out. The outputs of the work allowed for the elaboration of a draft law specifically related to chemicals and their wastes. The draft law is on the way to being submitted to parliamentarians for their validation and endorsement.

Dominican Republic

51. The Dominican Republic has one of the most dynamic and diverse manufacturing sectors in the Caribbean, which implies the use of hazardous chemicals. As a Party to the Basel, Stockholm, Rotterdam, and Minamata Conventions the Dominican Republic aims to raise awareness of the dangers and risks of chemicals on human health and the environment and establish guidelines on how to address them. Although the country has a set of regulations that constitute the environmental regulatory framework for chemicals management, it does not have policies or regulations to reduce the use of hazardous chemicals in the productive sectors. Since 2010, the country has been implementing its

National Policy on Sustainable Consumption and Production, which targets specific areas of action to reduce pollution, create efficient production systems and reduce resource consumption.

52. For example, in the Cibao region of the Dominican Republic, the widespread use of pesticides and other chemicals to combat pests and diseases that attack agricultural crops have contributed to environmental degradation and the incidence of chemical-related diseases. In the same region, Barrick Gold, a Canadian gold mining company, uses a massive amount of chemicals in its operations.

53. Furthermore, a study conducted in 2004 estimated that large quantities of products and substances were stored in the town of Bajos de Haina, in the southern province of San Cristobal. This included 9.8 tonnes of formaldehyde, 1.2 tonnes of lead, 416 tonnes of ammonia and 18.5 tonnes of sulphuric acid. According to the Ministry of Environment and Natural Resources, these chemicals primarily originated from industrial processes such as manufacturing, pharmaceuticals, oil refinery, and the production of metal and electrical components.

54. Based on the outcomes of the study and the enforcement of Law 64-00 on Environment and Natural Resources, which was adopted in 2000, a series of measures were developed to improve environmental compliance by industries located in industrial areas of Bajos de Haina, as well as in other areas of the country. Over the following 13 years, these measures yielded positive results. For example, the amount of pollutants released in the town of Bajos de Haina decreased by 60 per cent as compared to the 2004 estimate. Much remains to be done, however, including to expand knowledge on chemical management, improve the management of hazardous wastes, and develop a national plan for the management of chemicals-related emergencies and accidents.

55. Through the support provided by UN Environment's Special Programme on Institutional Strengthening for Chemicals and Waste Management, the Dominican Republic aims to build on existing measures to strengthen its institutional capacity to implement the Basel, Rotterdam, Stockholm, and Minamata Conventions, and the Strategic Approach to International Chemicals Management (SAICM). The national project will develop a SAICM National Implementation Plan within an Integrated National Programme for the Management of Chemical Substances. Priority issues include establishing a system of chemical import registration, regulating the transport of chemicals and chemical waste, exchanging information on management between ministries, developing a risk management programme on chemicals and hazardous waste, and developing interagency coordination mechanisms to respond to a chemical emergency as well as emergency response training.

56. These activities will enable the Dominican Republic to implement the provisions of relevant multilateral environmental agreements, as well as continuing to build the country's institutional capacity for managing safer chemical use.

57. Since the establishment of the project, the Dominican Republic has achieved the following milestones, as of October 2018:

- a) Development a registration database for the import of chemicals and their products, led by the Department of Hazardous Substances. This included the preparation of operating procedures on the use of the database and holding a training workshop to facilitate the use of the import register by relevant stakeholders.
- b) Drafting a set of technical regulations on the Transportation of Chemical Substances and Hazardous Materials, including the identification of areas where the regulations can be applied.
- c) Establishing mechanisms for inter-institutional coordination in response to chemical emergencies in collaboration with the Dominican Republic Emergency Operations Centre. This included carrying out awareness raising activities with the view to developing a structure for a coordinated response to emergencies and the establishment of a working committee for the National System of Chemical Emergencies. In addition, a training workshop, focusing on the use of incident control management systems for emergency response, was also hosted.

Iraq

58. Despite decades of war and conflict that have weakened its management institutions, Iraq is looking to the future and has made chemical and waste management a national priority. Iraq is now Party to the Basel, Rotterdam, and Stockholm Conventions, and is in the process of ratifying the Minamata Convention, signalling its commitment to prioritizing the integrated management of chemicals and waste, and protecting human health.

59. Iraq's project on the institutional strengthening of chemicals and waste management was selected in the first round for funding from the UN Environment's Special Programme. This project is a first for the country in the field of chemicals and waste, and aims to assess Iraq's waste management

policies, structures, and coordination mechanisms to enhance their effectiveness. Iraq's weakened institutional frameworks have been major barriers in the past for the sound management of chemicals and waste. The project's objectives include increasing the number of management regulations, performing a technical review of the gaps in the implementation of policies, strategies, and national programmes for the sound management of chemicals and waste, and increasing the number of staff trained in this capacity.

60. The three areas that the project will focus on are: 1) the assessment of gaps, weaknesses, and needs in legislative frameworks; 2) strengthening institutional capacity to implement policies; and 3) implementing sustainable structures for policy implementation. The project demonstrates a clear commitment to building strong institutions to protect the environment and human health. In addition to Special Programme funding, the project will receive substantial government financing and technical support from UN Environment's West Asia Office. The project will likewise focus on intergovernmental coordination, as well as partnerships with national, regional, and international organizations. The emphasis on multilateral cooperation will ensure that Iraq's ability to soundly manage chemicals and waste will continue to grow beyond the project's duration.

61. As of October 2018, Iraq had held its Special Programme inception workshop in August of the prior year, with partners from the Ministry of Health and Environment, UN Environment's West Asia Office and international experts, to address the country's needs in the field of the sound management of chemicals and waste. During the workshop, research was undertaken into the implementation of two of the project's proposed activities, specifically, the Global Harmonised System (GHS) and e-licensing. In addition, a gaps and needs analysis was conducted to assess current capacity and technological, institutional, financial and legislative frameworks. Furthermore, it was agreed that laws and regulations to support the project needed to be drafted, and that a chemicals management committee should be established in 2018.

Kyrgyz Republic

62. UN Environment's Chemicals and Health Branch UN Environment's Chemicals and Health Branch is providing wide-ranging support to Kyrgyzstan in a bid to help reduce its intensive use of chemicals in agriculture, mining and energy. Kyrgyzstan's national development strategy for its energy and fuel sectors outlines the country's vision to secure economic growth through the energy sector in a way that increases efficiency, facilitates the introduction of technology and secures the needs of future generations.

63. Although a reduction in pesticides supplies occurred following the collapse of the USSR as well as a reduction in purchasing capacity of agricultural enterprises in Kyrgyzstan, farmers' yields had been steadily on the decline, as they shifted to using an excessive amount of synthetic products that harm soil fertility. The project, which is funded by UN Environment's Special Programme on Institutional Strengthening for Chemicals and Waste Management, started in 2017 and is helping the country tighten its legislation on chemicals, improve the exchange of information and national reporting, and boost awareness on the safety of chemicals.

64. The United Nations Institute for Training and Research (UNITAR), the Independent Ecological Expertise Public Association, and other partners who are also supporting the project are designing training packages for decision-makers, customs officials, and other chemical focal points in Kyrgyzstan. A system for national agencies to report progress towards complying with international conventions on chemicals is also being set up, ensuring that the Central Asian country complies with the treaties in a coherent way.

65. As of October 2018, Kyrgyzstan had established its Special programme Project Coordination Committee and the "Interdepartmental Working Group for Coordinating Mechanisms in Chemicals Management" in April and May 2017 respectively. Relevant stakeholders from these groups attended the Special Programme inception workshop to introducing them to the goals and initial results of the project. Since the inception workshop, several other milestones have been achieved, specifically:

(a) A training workshop on "Synergy of international agreements in the field of chemical safety" was held for the benefit of Basel, Rotterdam, Stockholm, and Minamata Convention National Focal Points as well as the SAICM National Focal Point, and other relevant stakeholders. Training materials were developed in preparation for this workshop which is expected to contribute to the sustainability of the project outputs.

(b) A review and analysis of existing legislation related to chemicals and waste was carried out to identify gaps and shortcomings in national legislation and updating them such that they take into account the lifecycle management approach to product development and use. Based on

the results of this work, a draft action plan was developed to strengthen and improve the national legislative framework of the Kyrgyz Republic.

(c) A memorandum with the Door Media foundation was signed to facilitate the implementation of an awareness raising campaign for relevant stakeholders and the public on issues related to chemical safety in Kyrgyzstan.

Tanzania

66. Agricultural and industrial workers are often part of the informal labour market and work in substandard conditions. These workers tend to be put at severe risk of acute poisoning and chronic illness from exposure to pesticides and industrial chemicals. Despite the fact that the government of Tanzania has made significant efforts to address the critical challenge of managing chemicals and waste, the level of awareness among the population of the adverse effects of chemicals remains low. Furthermore, the country has been expanding its oil and gas sectors in recent years, which has resulted in the accumulation of more chemicals in the air and on land from increased emissions. With limited capacity to monitor key chemicals, the country has had restricted ability to develop suitable strategies for combatting the adverse impacts that chemicals and waste can have on human and environmental health.

67. Today, Tanzania is on the threshold of a singular effort to reverse the situation. Bolstered by support from UN Environment's Special Programme on Institutional Strengthening for Chemicals and Waste Management, a national, multi-sectoral project launched in 2017 addresses the country's health and environmental concerns resulting from the sound management of chemicals and waste. The project is multisectoral, and aims to raise Tanzania's institutional capacity to develop, monitor and enforce policy for the sound management of chemicals and waste throughout their lifecycle. The project's steps to address these issues include: (i) formulating a national strategy on chemicals and waste management; (ii) developing regulations for controlling and managing mercury; (iii) training regulatory authorities, agriculture extension officers, and municipal councils; (iv) creating a national database on chemicals and waste; and (v) enhancing institutional and stakeholder cooperation.

68. While Tanzania continues to build capacity to address current and future issues, this project is expected to strengthen the country's ability to protect its people and environment from the adverse impacts of chemicals and waste.

69. Since the establishment of the project, the Tanzania has been active in achieving the objectives of the project. As of October 2018, the milestones that have been accomplished include:

- a) As part of a first group of activities, a training workshop on chemicals and waste in the oil and gas sector has been conducted, and training materials have been prepared. Fifty-two technical officers from various regulatory authorities were trained in the first session. At least 30 officials from local government authorities which deals with issuing of trade licenses for chemical dealers were trained as part of a second training round, held in mid-October 2018.
- b) Collection of information from relevant institutions, including government institutions, the private sector, universities and research institutions, non-governmental organizations, etc. is ongoing, while the primary review of capacity needs assessment has been completed.
- c) Draft regulations on the control and management of mercury releases has been prepared. Stakeholders consultations to obtain comments on the draft regulations are planned.
- d) A database framework, including information required to populate the database, user requirements, administrators and main stakeholders who will have access to the database have been identified. Developing of a web-based database on chemicals and waste is ongoing.

Ukraine

70. UN Environment's Chemicals and Health branch is helping Ukraine crack down on the illegal trafficking of counterfeit pesticides. As is often the case with counterfeit goods, imitation pesticides – which may pose even more risks to people and the environment than certified ones – are cheap to make and lucrative. Of the 100,000 tonnes of the chemicals consumed in Ukraine each year, 25 per cent are estimated to be illicit, whether produced locally or imported.

71. Ukraine is party to the Basel, Rotterdam, and Stockholm Conventions hosted by UN Environment. The project titled 'Strengthening the Enforcement of the Rotterdam Convention in Ukraine and Building Capacity to Counteract Illegal Trafficking of Chemicals' was launched in 2017 and is helping the country fulfil several of its obligations, including those towards the Rotterdam Convention. UN Environment's Special Programme on Institutional Strengthening for Chemicals and Waste Management is providing financial support to Ukraine in developing and enforcing a national

policy to inform other countries on whether shipments of listed hazardous chemicals would be accepted, in line with the Convention's principle of prior informed consent. Capacity building is also reinforced with a view to tackling illegal pesticide trafficking as it relates to the work on illegal international traffic, which is one of the five themes of the Strategic Approach to International Chemicals Management, whose Secretariat is hosted by UN Environment.

72. Strategies for detecting and preventing illicit pesticides include custom risk analyses, applying the "Know Your Customer" principle, and capacity building for authorities and other stakeholders. However, most of these approaches are yet to be introduced in Ukraine. Political instability and an economic downturn have weakened the management of chemicals in the country. The project is led by the Ministry of Ecology and Natural Resources of Ukraine, and supported by the International Centre for Environmental Conflictology and Safety, among others.

73. Since the establishment of the project, Ukraine has been active in achieving the objectives of the project. The milestones that have been accomplished, as of October 2018, include:

- a) Holding the Special Programme inception workshop for the benefit of relevant stakeholders to present the project activities and to discuss the current status of implementation of the Rotterdam Convention in Ukraine as well as the issue of illegal pesticides.
- b) Establishing and holding the first meeting of the working group on the Rotterdam convention. The group discussed gaps in implementation of the Rotterdam Convention in Ukraine and practical measures to address them, particularly setting up an inter-sectoral working group.
- c) Holding a training of trainers' workshop on the Rotterdam Convention and Illegal Trafficking of Pesticides. The main objectives of the meeting were a) to discuss key issues of implementation of the Rotterdam Convention in Ukraine, and the trans-border transportation of illegal pesticides; b) to provide training on methodological approaches to teaching the aforementioned topics; and c) to agree on the project's next steps.
- d) Developing a communication strategy on institutional strengthening and capacity building campaign to set up three centers of assistance to support farmers who suffered from the use of counterfeit pesticides.
- e) A training workshop on the prevention of illegal trafficking of pesticides was held in the city of Uzhgorod on 24 – 25 May 2018. The main purpose of the seminar was to analyze the current situation with countering illegal pesticides and illegal trafficking of chemicals across borders. Participants also discussed the existing gaps in communication between the counterparts and international experience in terms of successful fight against the mentioned violations.

B. Second round of applications

74. At its third meeting, the Executive Board approved seventeen projects in Afghanistan, Belarus, Brazil, China, Ecuador, Former Yugoslav Republic of Macedonia, Gambia, The, Ghana, India, Kenya, Kiribati, Nigeria, Papua New Guinea, Republic of Moldova, Serbia, Uganda and Viet Nam.

75. An overview of the projects and updates on their status of implementation and lessons learned can be found on the Special Programme website⁹.

⁹ Available at <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/special-programme/special-programme-projects-database>

Appendix

Table 1
List of projects approved by the Executive Board at its second meeting

Country	Project Title
<i>Argentina</i>	Strengthening national capacity for the sound management of chemicals and waste
<i>Benin</i>	Legal and institutional strengthening for the sound management of chemicals in Benin
<i>Dominican Republic</i>	Strengthening institutional capacity for the implementation of the Basel, Rotterdam and Stockholm conventions, the Minamata Convention and SAICM in Dominican Republic
<i>Iraq</i>	Develop and strengthen the institutional structure for the management of chemicals and waste in Iraq
<i>Kyrgyz Republic</i>	Strengthening capacities for national implementation of chemicals and waste related international agreements
<i>Tanzania</i>	Strengthening institutional capacity for sound management of chemicals and waste in the United Republic of Tanzania
<i>Ukraine</i>	Strengthening the enforcement of the Rotterdam Convention in Ukraine, and building capacity to counteract illegal trafficking of chemical

Table 2
List of projects approved by the Executive Board at its third meeting

Country	Project Title
<i>Afghanistan</i>	Enhancing the sustainable institutional capacity to regulate toxic chemicals
<i>Belarus</i>	Establish a sustainable national infrastructure to join and support the implementation of the Rotterdam Convention in the Republic of Belarus
<i>Brazil</i>	Strengthening Institutional Capacity for the Sound management of Chemicals through the Establishment of necessary structure to implement the national legislation on industrial Chemicals
<i>China</i>	China-Strengthening institutional capacity for the implementation of the Basel, Rotterdam, Stockholm and Minamata Conventions and SAICM
<i>Ecuador</i>	Strengthening of the national control system for the management of dangerous materials in Ecuador
<i>Former Yugoslav Republic of Macedonia</i>	Strengthening Institutional capacities for mainstreaming quadruple synergy schemes in implementation of the National Action Plans (NAPs) for implementation of SAICM and Inclusion of Minamata convention
<i>Gambia, The</i>	Institutional Capacity Building for the Implementation of the Multilateral Environmental Agreements in The Gambia
<i>Ghana</i>	Strengthening Institutional Capacity for the Sustainable Sound Management of Chemicals and Waste throughout their Life-cycle and the Effective Implementation of the Basel, Rotterdam, Stockholm and Minamata Conventions and the Strategic Approach to International Chemicals Management (SAICM) in Ghana
<i>India</i>	Institutional Capacity Building for Sustainable Management of Chemical and Wastes with Special Focus on Persistent Organic Pollutants (POPs)
<i>Kenya</i>	Support to chemicals and wastes MEAs and SAICM implementation in Kenya
<i>Kiribati</i>	Strengthening legal systems, institutions and data collection infrastructure in Kiribati
<i>Nigeria</i>	Strengthening of the legal and institutional infrastructures for sound management of chemicals (SMC) in Nigeria
<i>Papua New Guinea</i>	Strengthening the institutional framework and national capacity of key stakeholders in Papua New Guinea in wastes and chemical management
<i>Republic of Moldova</i>	Improving sustainable institutional and regulatory framework for chemicals and waste management throughout their lifecycle in the Republic of Moldova
<i>Serbia</i>	Strengthening the synergies between the Basel, Rotterdam, Stockholm and Minamata Conventions at the national level in the Republic of Serbia

Uganda	Strengthening national institution capacity in sound management of chemicals and waste in Uganda
Viet Nam	Strengthening national capacity in sound chemical and waste management for the implementation of the Stockholm, Basel, Rotterdam, Minamata Conventions, SAICM in Viet Nam

Table 3

List of projects approved by the Executive Board at its fourth meeting

Country	Project Title
Albania	Strengthening sound chemicals and waste management in Albania, demonstrating improvement of Health Care Waste (HCW) management.
Angola	Strengthening Angola's National Chemicals and Waste Management Programme by establishing sustainable, integrated, and coherent national structure with emphasis on Private Sector participation
Bolivia (Plurinational State of)	Special Program for the Strengthening of National Capacities for Chemical Substances and Hazardous Waste Management in the Plurinational State of Bolivia
Cambodia	Institutional strengthening in Cambodia for efficient and coordinated implementation of the chemicals and waste management international agreements
Ethiopia	Enhancing Ethiopia's Institutional Capacity for Sound Management of Hazardous Wastes and POPs Chemicals and Improving Reporting Obligation under Basel and Stockholm Conventions
El Salvador	Institutional strengthening for El Salvador in the implementation of the Basel, Stockholm, Minamata and Rotterdam Conventions and the Strategic Approach for the Management of Chemical Products at the International Level
Eswatini	Institutional Capacity development and strengthening for the Sound Management of Chemicals and Waste in the Kingdom of Eswatini
Iran (Islamic Republic of)	The Implementation of Cleaner Production Practices to Manage Chemicals and Waste in Oil Refinery
Kazakhstan	Strengthening the National Capacity of the Republic of Kazakhstan to Regulate Chemicals Through Ensuring Compliance with Obligations Under International Multilateral Environmental Agreements
Micronesia (Federated States of)	Strengthening Institutional Capacity for the Chemicals Management in the FSM
Nauru	Strengthening the national capacity for integrated chemicals and waste management in Nauru
Pakistan	Strengthening of national legislation and capacity building of stakeholders for sound chemicals and hazardous waste management in Pakistan
Palau	Strengthening the national institutional capacity for chemicals and waste management in Palau
Palestine (State of)	Strengthening the institutional capacity of the State of Palestine for sound waste and chemicals management and fostering stakeholder buy-in under the BRS Conventions and supporting process towards ratification of the Minamata Convention
South Africa	Phasing out of lead in paint and the development of an action plan for SAICM emerging contaminants (lead in paint, HHPs, EPPPs, EDCs, & Cd)
Tajikistan	Strengthening institutional capacity for national implementation of the Stockholm and Basel international conventions and building capacity for accessing the Rotterdam Convention in Tajikistan
Tunisia	Institutional strengthening and capacity building project towards achieving Environmental Sound Management (ESM) of hazardous wastes and chemicals at the industrial level as well as enhancing compliance and implementation of chemicals and waste Multilateral Environmental Agreements (MEAs) including Basel, Rotterdam and Stockholm conventions
Vanuatu	Strengthening the National Institutional Capacity for Chemicals and waste management in Vanuatu



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**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:**

Financing of the Strategic Approach

**Report of the Global Environment Facility to the third meeting
of the Open-ended Working Group for the Strategic Approach
to International Chemicals Management**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the report to the third meeting of the Open-ended Working Group for the Strategic Approach to International Chemicals Management, received from the Global Environment Facility. The report is presented in the annex as received and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Report of the Global Environment Facility to the Third Meeting of the Open-Ended Working Group for the Strategic Approach to International Chemicals Management

Introduction

1. This report provides an account of the Global Environment Facility's (GEF) support to the Strategic Approach to International Chemicals Management (SAICM) over the sixth replenishment period (GEF-6) of July 1, 2014 to June 30, 2018, as well as an overview of the results of the seventh GEF replenishment (GEF-7) process.
2. The Fourth International Conference on Chemicals Management (ICCM4) in 2015 took two decisions related to the GEF:
 - a. Invites the Global Environment Facility, within its mandate, to support the implementation of the Conference resolutions of all emerging policy issues and to continue that support in its 7th replenishment.
 - b. Invites the Global Environment Facility to continue to support projects that implement the Strategic Approach, taking into account the areas identified in the overall orientation and guidance, and to consider enhancing funding for the Strategic Approach in the process of the seventh replenishment of its trust fund.
3. The seventh GEF replenishment period (GEF-7) began in July 2018. The decisions and priorities from ICCM 4 were taken into consideration when developing the GEF-7 Chemicals and Waste programming directions. During the replenishment negotiations, an allocation for SAICM was agreed in order to continue and deepen the support to sound chemicals management.

GEF Activities Supporting SAICM

4. In implementing its priorities for sound chemicals and waste management, the GEF strives to assist countries to address chemicals management in an integrated manner in their national development planning and help mobilize and catalyze other sources of finance for projects and programs for sound chemicals management to achieve global benefits. The GEF activities are complementary to those related to the Quick Start Program.

GEF-6 SUPPORT TO SAICM

In GEF-6, US\$13 million was allocated to address SAICM priorities. Table 1 below provides a list of GEF-6 funded projects directly contributing to SAICM priorities.

Table 1: List of GEF-6 Projects Contributing to SAICM Priorities

Country	Project	GEF Agency	SAICM Amount (US\$) ¹	Total GEF Grant (US\$) ²	Co-financing (US\$)
Global	Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM)	UNEP	9,190,000	8,190,000	20,580,000
Vietnam	Application of Green Chemistry in Vietnam to Support Green Growth and Reduction in the Use and Release of POPs/Harmful Chemicals	UNDP	430,000	1,999,800	8,400,000
Global	Guidance Development and Case Study Documentation of Green Chemistry and Technologies	UNIDO	770,000	1,770,000	6,524,000
Thailand	Applications of Industry-urban Symbiosis and Green Chemistry for Low Emission and Persistent Organic Pollutants (POPs)-Free Industrial Development in Thailand	UNIDO	680,234	8,966,000	59,200,000
Peru	Sustainable Industrial Zone Development	UNIDO	300,000	4,864,000	36,065,000
Total			11,370,234	26,789,800	130,769,000

5. GEF-6 resources focused on funding one major project to deliver strategic results. This project was developed in coordination with the SAICM Secretariat and will be implemented by UNEP. The project Global Best Practices on Emerging Policy Issues of Concern under the Strategic Approach to International Chemicals Management aims to accelerate the adoption of national and value chain initiatives to control Emerging Policy Issues and contribute to the 2020 SAICM goal and the 2030 Agenda for Sustainable Development. There are three main components to the project: (1) promoting regulatory and voluntary action by government and industry to phase out lead in paint, (2) lifecycle management of chemicals present in products, and knowledge management and (3) stakeholder engagement.

6. The other four projects listed in Table 1 utilizing SAICM funding in GEF-6 are multi chemical and multi focal area projects. These projects support synergies between the Chemicals Conventions in support of the Stockholm and Minamata Conventions along with SAICM, which is in line with guidance that the GEF has received requesting the support of synergies between the conventions.

¹ This amount does not include agency fees.

² This amount does not include agency fees.

UPDATE ON THE 7TH REPLENISHMENT OF THE GEF TRUST FUND

7. Negotiations for the seventh replenishment of the GEF Trust Fund (GEF-7) were successfully concluded on April 25, 2018 in Stockholm, Sweden when 28 countries pledged a total of \$4,065 million towards programming during the GEF-7 period (July 1, 2018 to June 30, 2022). The 28 countries are: Australia, Austria, Belgium, Brazil, Canada, China, Côte d'Ivoire, Czech Republic, Denmark, Finland, France, Germany, India, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Slovenia, South Africa, Sweden, Switzerland, United Kingdom, and the United States of America.
8. The GEF Council endorsed the outcomes of the replenishment process at its 54th meeting, including the Programming Directions, Policy Recommendations, and Replenishment Resolution.
9. The Participants allocated a total of \$599 million to the chemicals and waste focal area, representing some 15 percent of the total GEF-7 resource envelope, of which \$12 million is indicatively allocated to the implementation SAICM priorities.
10. In addition, the GEF-7 Impact Programs on (i) Food, Land-Use and Restoration, (ii) Sustainable Cities, and (iii) Sustainable Forest Management for Major Biomes are expected to deliver global environmental benefits for Chemicals and Waste.



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**Preparations for the fifth session of the International
Conference on Chemicals Management**

Preparations for the fifth session of the International Conference on Chemicals Management

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report on the preparations for the fifth session of the International Conference on Chemicals Management. The report is presented in the annex as prepared by the secretariat and has not been formally edited.

* SAICM/OEWG.3/1.

Annex

Preparations for the fifth session of the International Conference on Chemicals Management

I. Background

1. In its resolution I/1, adopted at its first session, the International Conference on Chemicals Management invited the Executive Director of the United Nations Environment Programme to convene further sessions of the Conference, working in collaboration with the participating organizations of the Inter-Organization Programme for the Sound Management of Chemicals, the United Nations Development Programme and other intergovernmental organizations.
2. Paragraphs 24 and 25 of the Overarching Policy Strategy of the Strategic Approach to International Chemicals Management set out the functions of the International Conference on Chemicals Management. The Conference will undertake periodic reviews of the Strategic Approach to International Chemicals Management and its functions will be:
 - (a) To receive reports from all relevant stakeholders on progress in implementation of the Strategic Approach and to disseminate information as appropriate;
 - (b) To evaluate the implementation of the Strategic Approach with a view to reviewing progress against the 2020 target and taking strategic decisions, programming, prioritizing and updating the approach as necessary;
 - (c) To provide guidance on implementation of the Strategic Approach to stakeholders;
 - (d) To report on progress in implementation of the Strategic Approach to stakeholders;
 - (e) To promote implementation of existing international instruments and programmes;
 - (f) To promote coherence among chemicals management instruments at the international level;
 - (g) To promote the strengthening of national chemicals management capacities;
 - (h) To work to ensure that the necessary financial and technical resources are available for implementation;
 - (i) To evaluate the performance of the financing of the Strategic Approach;
 - (j) To focus attention and call for appropriate action on emerging policy issues as they arise and to forge consensus on priorities for cooperative action;
 - (k) To promote information exchange and scientific and technical cooperation;
 - (l) To provide a high-level international forum for multi-stakeholder and multisectoral discussion and exchange of experience on chemicals management issues with the participation of non-governmental organizations in accordance with applicable rules of procedure;
 - (m) To promote the participation of all stakeholders in the implementation of the Strategic Approach.

II. Scheduling the International Conference on Chemicals Management

3. Paragraph 25 of the Overarching Policy Strategy provides that “where appropriate, sessions of the Conference should be held back to back with meetings of the governing bodies of relevant intergovernmental organizations in order to enhance synergies and cost-effectiveness and to promote the Strategic Approach’s multisectoral nature. Sessions of the Conference should be held in 2009, 2012, 2015 and 2020, unless otherwise decided by the Conference”.
4. The first session of the Conference was held in Dubai, United Arab Emirates, from 4 to 6 February 2006, back to back with the ninth special session of the Governing Council of the United Nations Environment Programme/Global Ministerial Environment Forum. The second session was held in Geneva from 11 to 15 May 2009, back to back with the fourth meeting of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants and the sixty-second World Health Assembly. The third session of the Conference, initially intended to be held in Geneva

back to back with the International Labour Conference in May 2012, was held at the United Nations Office in Nairobi from 17 to 21 September 2012 owing to the change in date of the International Labour Conference and its close proximity to the United Nations Conference on Sustainable Development and the fourth session of the intergovernmental negotiating committee to prepare a global legally binding instrument on mercury. The fourth session of the Conference was held in Geneva, Switzerland from 28 September to 2 October 2015.

5. Accordingly, the fifth session of the International Conference on Chemicals Management is expected to be held over five days, from Monday 5 October, to Friday 9 October 2020, with regional meetings and technical information sessions to be held on Sunday 4 October 2020. The Government of Germany has kindly offered to host the meeting in Bonn, Germany.

III. Preparations for the fifth session of the Conference

6. The third meeting of the Open-ended Working Group being held in Montevideo, Uruguay, 2-4 April 2019 and the Strategic Approach Regional meetings that are previewed for 2020 are the main avenues to prepare for the fifth session of the Conference. In addition, the intersessional process considering SAICM and the sound management of chemicals and waste will contribute to the preparations of the Conference. The ICCM5 Bureau will also play an important function in supporting the preparation of the Conference.

7. The fifth session will mark the concluding landmark since the adoption of the Strategic Approach in Dubai in February 2006. The Conference is therefore the final step in assessing the achievements and successes of the Strategic Approach and the starting point for the sound chemicals and waste management beyond 2020.

8. Unless otherwise decided by the Conference, the fifth session of the Conference will be the last Strategic Approach decision-making meeting to be held. The occasion will provide an opportunity to relive the spirit of the first session of the Conference and offer renewed multi-stakeholder and multi-sectoral commitment to the sound management of chemicals and waste beyond 2020.

IV. Participation and organization of work

9. The fifth session of the Conference will be open to representatives of all interested Governments and intergovernmental organizations, non-governmental organizations and academia in accordance with credentials and accreditation requirements similar to those applied at the fourth session of the Conference.¹

10. Subject to the availability of resources, and in line with the credentials and accreditation procedures, travel funding will be provided to representatives from eligible developing countries and countries with economies in transition and to a selected number of non-governmental representatives. In addition, in order to encourage multisectoral participation, Governments seeking travel funding are expected to nominate individuals from a variety of sectors, including agriculture, environment, health, industry and labour.

11. In light of the experience gained from previous sessions of the Conference, the secretariat estimates that between 1300 and 1500 participants will attend the Conference, bringing together a diverse group of representatives from Governments, intergovernmental organizations, non-governmental organizations, industry and academia, and observers.

12. As mentioned above, the fifth session of the Conference is expected to be held over five days, from Monday 5 October to Friday 9 October 2020 in Bonn. Ms. Gertrud Sahler, Germany, will preside over the Conference.

V. High-level dimension of the fifth session of the Conference

13. In view of the above, and with the aim of celebrating 14 years of the Strategic Approach, it is proposed that a high-level multisectoral and multi-stakeholder event be organized for the fifth session of the Conference. The Conference will be an interactive multisectoral and multi-stakeholder platform

¹ Governments will be required to provide credentials for their representatives issued either by the Head of State or Government or by the Minister for Foreign Affairs in accordance with the rules of procedure of the Conference. The participation of intergovernmental and non-governmental organizations in the fifth session of the Conference is to be confirmed by a simple accreditation procedure based on the registration of the organizations for the session.

for the exchange of experience, with thematic side events, exhibitions, information sessions, media events and other outreach and information-sharing activities, recognizing that the entire period of the Strategic Approach marks a significant milestone and occasion for stakeholders to fully examine and celebrate the progress, achievements, challenges and opportunities of the Strategic Approach.

14. In light of the celebration of the conclusion of the Strategic Approach, the Open-ended Working Group may wish to consider how a possible high-level dimension of the fifth session of the Conference should be arranged. Such efforts could include:

- (a) Prominent individuals as keynote speakers from Governments, industry, intergovernmental organizations and non-governmental organizations in the opening ceremony of the fifth session of the Conference or for the high-level segment;
- (b) Extending an invitation to previous presidents of the Conference to play an active role at the session in celebration of the Strategic Approach and promoting further implementation;
- (c) Scheduling of a high-level segment during one or two days of the session to allow for participation in special events by Heads of Government, ministers, heads of organizations, industry chief executive officers and other senior representatives;
- (d) Organization of special events during the session such as thematic round tables for Ministers, heads of organizations, industry chief executive officers and other senior representatives;
- (e) Scheduling of a high-level media event or press conference.

VI. Technical briefings, side events and exhibitions

15. Events such as technical briefings, side events and exhibitions allow for important opportunities to promote the participation of all stakeholders in the implementation of the Strategic Approach and have been incorporated into the programme of the Conference at previous sessions. Such events promote information exchange and scientific and technical cooperation, coherence among chemicals management instruments at the international level and strengthening of national chemicals management capacities in line with the functions of the Conference.

16. Information on how to apply for and convene technical briefings, side events and exhibitions will be issued by the secretariat in advance of the fifth session of the Conference. These events may include presentations of completed activities and share technical information and knowledge.

VII. Estimated budgetary requirements for the fifth session of the Conference

17. Based on the ICCM4 resolution, an indicative budget provides \$ 1,450,000 USD for the fifth session of the Conference. However, considering the factors set out above and the expenditures at previous sessions of the Conference, the Strategic Approach secretariat estimates that the actual costs may be higher.

18. The estimated budget covers the five days of the meeting. The estimated budget assumes that two participants from about 100 eligible countries would be funded together with a smaller number of non-governmental organizations.

19. At the time of writing the present note, the secretariat had not received any pledges towards convening of the fifth session of the Conference.

20. The Open-ended Working Group may wish to encourage donors to contribute to the organization of the fifth session of the Conference and suggest other possible sources of funding for the secretariat in preparation and planning for the fifth session of the Conference.



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**Progress towards the achievement of the 2020
overall objective of the sound management of
chemicals**

**Inter-Organization Programme for the Sound Management of
Chemicals (IOMC) plans for future actions to implement the
goals and targets of the 2030 Agenda (updated October 2018)**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) on the plans for future actions to implement the goals and targets of the 2030 Agenda for Sustainable Development. The report is presented in the annex as received from the IOMC and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Inter-Organization Programme for the Sound Management of Chemicals (IOMC) plans for future actions to implement the goals and targets of the 2030 Agenda (updated October 2018)

1. Introduction

At the first meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste beyond 2020 (Brasilia, Brazil, 7-9 February 2017), participants agreed that the secretariat, in consultation with the Bureau of the International Conference on Chemicals Management, would produce a number of documents for consideration at the second meeting of the intersessional process, including:

In coordination with the IOMC member organizations, a mapping of the main policies and actions of each IOMC organization relevant to the Strategic Approach and the sound management of chemicals and wastes and plans for future actions in the area to implement the goals and targets of the 2030 Agenda

The IOMC has provided a wide-range of documents to the SAICM process in recent years regarding their activities and plans, including:

- the *IOMC Analysis of the Global Plan of Action and Proposal for Simple Indicators of Progress*¹
- *Report on SAICM Implementation by IOMC organizations for ICCM4*², and
- the “Overall Orientation and Guidance for Achieving the 2020 Goal” tracking tables³, which provide information about main actions relevant to SAICM and the sound management of chemicals and wastes up to 2020.⁴

The focus of the current paper is on future actions and policies beyond 2020 more specifically linked to the SDGs and 2030 Agenda. Section 2 provides information from all Participating Organizations regarding the main policies and actions they have or plan to undertake regarding sound chemicals and waste management in the context of the SDGs. Appendix 1 is a chart mapping IOMC organizations chemicals and wastes activities against the 17 SDGs.

n.b. As plans and actions related to the SDGs are evolving, additional information and updates to this document may be necessary.

¹http://old.saicm.org/images/saicm_documents/iccm/ICCM4/FINALmtgdoc/INFdoc/iccm4_inf7_iomc%20analysis%20.pdf

²http://old.saicm.org/images/saicm_documents/iccm/ICCM4/FINALmtgdoc/INFdoc/ICCM4_INF2_Activities%20IOMC.pdf

³ In addition to the IOMC, the OOG tables were also completed by the BRS Secretariat, IAEA, and UNECE.

⁴ The SAICM website states that the OOG “11 basic elements...have been recognized as critical at the national and regional levels to the attainment of sound chemicals and waste management”.

2. Plans of the IOMC Participating Organizations

In this section, IOMC Participating Organizations have provided information regarding the main policies and actions they have or plan to undertake regarding chemicals and waste management in the context of the SDGs.

FAO

FAO has aligned its strategic framework and principles for sustainable food and agriculture⁵ to the SDGs⁶, promoting an integrated approach to agriculture that reduces reliance on agro-chemical use, enhances ecosystem services underpinning food production and promotes agro-ecology.

Among IOMC organisations, FAO has the mandate to achieve sound pesticide management. FAO's plan and actions aim at promoting a pesticide life-cycle management approach, as encouraged by the International Code of Conduct on Pesticide Management⁷. As such and as a GEF implementing agency, FAO provides strong support to governments and stakeholders to strengthen their institutional, technical, and legal infrastructure and capacities for sound management of agro-chemicals. FAO support activities cover pesticide legislation and registration, compliance and enforcement, risk reduction, Integrated Pest Management (IPM) promotion through Farmer Field Schools (FFS), regional strategies for harmonisation and collaboration, Rotterdam Convention implementation, etc.

FAO's actions therefore contribute directly to many of the SDGs and strongly focus on SDG 2 (on zero hunger) and FAO's programme on pest and pesticide management contributes directly to SDG 12 and target 12.4 on sound management of chemicals and waste. FAO's work is also addressing many other SDGs. To name just a few examples: FAO extensive programme on FFS contributes to SDG 1 (on no poverty) and SDG 5 (on gender equality), FAO policies to promote IPM and work on soil pollution⁸ contribute to SDG 15 (on life on land), and FAO long-lasting programme on disposal of obsolete pesticides and associated wastes closely relates to SDGs 3, 6, 12, 15, and 17 altogether.

One of the focus areas of FAO current and future work on pesticides targets Highly Hazardous Pesticides (HHPs), those pesticides that present particularly high levels of acute and chronic toxicity to human health or the environment. Many pesticides of concern remain readily available to farmers and producers in low and middle-income countries. Therefore, in the context of SDGs 2 (on zero hunger), 3 (on good health and well-being), 12 (on responsible consumption and production) and 17 (on partnership for global goals), and in cooperation with SAICM stakeholders, FAO is committed to increasing the suitability of agriculture and food systems by assisting countries in phasing out the use of HHPs. The joint FAO/UNEP/WHO Strategy⁹ and the FAO/WHO Guidelines on HHPs¹⁰ have been published in 2016 and 2017, respectively, to guide national policies and action on sound chemicals management. In the last two years, several African countries have developed regional and national action plans, including regulatory and non-regulatory measures, to mitigate risks posed by HHPs and to promote low-risk, non-chemical alternatives. These plans are being implemented with the assistance of FAO and other strategic partners. In the prevailing context of limited national capacity, a growing emphasis on the need for regional collaboration has emerged to strengthen sound chemical management in these countries. The development of regional strategies and coordination mechanism is at the core of FAO's current work on HHPs.

Sound management of chemicals and waste underpins the effective implementation and achievement of the SDGs at the country level. In the coming years, FAO will continue strengthening national

⁵ <http://www.fao.org/publications/transforming-food-agriculture-to-achieve-sdg/en/>

⁶ <http://www.fao.org/sustainable-development-goals/en/>

⁷ <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/>

⁸ <http://www.fao.org/about/meetings/global-symposium-on-soil-pollution/en/>

⁹ <http://www.saicm.org/Default.aspx?tabid=5479>

¹⁰ <http://www.fao.org/3/a-i5566e.pdf>

capacity for pesticide lifecycle management and meanwhile integrating pesticide management into food systems and a range of cross-cutting issues, such as biodiversity, climate change and gender etc., aimed at better implementing the 2030 agenda.

ILO

Productive employment and decent work are key elements to achieving a fair globalization and poverty reduction. The four pillars of the ILO's Decent Work Agenda – employment creation, social protection, rights at work, and social dialogue – became integral elements of the new 2030 Agenda for Sustainable Development. Goal 8 of the 2030 agenda calls for the promotion of sustained, inclusive and sustainable economic growth, full and productive employment and decent work, and is a key area of engagement for the ILO and its constituents. Furthermore, key aspects of decent work are widely embedded in the targets of many of the other 16 goals of the UN's new development vision.

The ILO work on Health and safety at the workplace includes the area of chemical safety and the environment and links to SDG targets 3.9, 8.8 and 16.6. The field of occupational safety and health is related to the “health” SDG, namely its target 3.9: “by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination”; the “jobs” SDG, namely its target 8.8: “protect labour rights and promote safe and secure working environments of all workers, including migrant workers, particularly women migrants, and those in precarious employment”; and the “institutions” SDG, namely its target 16.6: “develop effective, accountable and transparent institutions at all levels”.

The protection of workers from the exposure to hazardous substances has always been a major concern for the ILO. Serious incidents still occur and there are still negative impacts on both human health and the environment, and it is agreed that the sound management of chemicals at the workplace is directly linked to protection of the environment. Work-related deaths, injuries and diseases take a particularly heavy toll in developing nations, where large numbers of people are engaged in hazardous activities including agriculture, construction, logging, fishing and mining. Death and disability resulting from hazardous work is a major cause of poverty, affecting entire families. The poorest and least protected, often women, children and migrants, are among the most affected.

The *agricultural sector* for instance, employs an estimated 1.3 billion workers worldwide, which is half of the world's labour force. In terms of fatalities, injuries and work-related ill-health, it is one of the three most hazardous sectors of activity (along with construction and mining). Even when technological developments have mitigated the drudgery of agricultural work, there are new risks related to the use of sophisticated machinery and intensive use of chemicals and pesticides. Wider community exposure to pesticides may occur in the form of contamination of foodstuffs, the diversion of chemically treated seeds for human consumption, contamination of groundwater, etc. In this respect, the ILO has launched the Programme called “Global Action for Prevention on Occupational Safety and Health” OSH-GAP which has been selected by the ILO as one of the Office's five flagship programmes and aims to create the “necessary conditions” to improve safety and health at work in a sustainable manner.

The ILO will continue to review and promote its numerous conventions on chemicals and related areas and disseminate its codes of practice and guidelines on this matter. More specifically, the ILO will be developing new technical guidelines on chemical hazards and plans to focus on the promotion of the Chemicals Convention, 1990 (No. 170) which is the Convention concerning Safety in the use of Chemicals at Work. It also plans to consolidate a number of chemical instruments including: Convention.13 on white lead; Convention .136 and Recommendation.144 on benzene; Recommendation.4 on lead poisoning; and Recommendation.6 on white phosphorous; in the context of Convention.170 and Recommendation.177 on chemicals; as will be determined by the International Labour Conference (ILC). The ILO will also be taking action for the promotion of the Asbestos Convention, 1986 (No. 162) concerning Safety in the Use of Asbestos and the Prevention of Major Industrial Accidents Convention, 1993 (No. 174).

Moreover, the 4th ILO Standard Review Mechanism - Tripartite Working Group met in September 2018 and reviewed a number of OSH instruments, including the following two instruments directly relevant to this discussion. The Safety and Health in Construction Convention, 1988 (No. 167) and its Recommendation No.175, and the Safety and Health in Mines Convention, 1995 (No. 176) and its Recommendation No.183. Within the upcoming discussions on the Minamata Convention, Article nine of Convention 176 addresses safety and health concerns in the application of hazardous substances e.g. mercury which is still widely used in artisanal mining operations. To this end the ILO has drafted a working paper on possible substitutes to the use of mercury in artisanal mining. On the other hand, Convention 167 is critical especially in respect of exposure to chemicals (Article 28) and it is linked to C162 concerning exposures to asbestos especially in construction works including during demolitions and waste disposal of materials containing asbestos. This is in addition to mining and handling of building materials containing crystalline silica and lately concerns are also being raised in respect of exposures to artificial clay as to whether it could lead to long term to respiratory disorders.

Furthermore the ILO's Green Jobs programme promotes the "greening" of enterprises, workplace practices and the labour market as a whole. These efforts create decent employment opportunities, enhance resource efficiency and build low-carbon sustainable societies. Green jobs are defined as "decent jobs that contribute to preserve or restore the environment", be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Such jobs help to: improve energy and raw materials efficiency; limit greenhouse gas emissions; minimize waste and pollution; protect and restore ecosystems; and support adaptation to the effects of climate change. This links to a number of SDGs including 8.4, 7, 11, 12, 13, 14 and 15. Environmental sustainability constitutes one of the three dimensions of sustainable development, and several SDGs are considered primarily "environmental": SDG 11 (human settlements), SDG 12 (sustainable production and consumption), SDG 13 (climate change), SDG 14 (oceans) and SDG 15 (ecosystems).

UNDP

Anchored in the 2030 Agenda, and committed to the principles of universality and equity, UNDP's vision for its 2018-2021 Strategic Plan is to help countries eradicate poverty in all its forms, accelerate structural transformations for sustainable development, and build resilience to crises and shocks. UNDP's work on chemicals and waste management will primarily fall under its activities aimed to accelerate structural transformation for sustainable development.

As a GEF implementing agency, UNDP plans to continue supporting the developing countries in addressing priorities under chemicals-related global environmental agreements and promoting circular economy. UNDP implemented projects will strive to prevent the exposure of humans and the environment to harmful chemicals and waste of global importance, including persistent organic pollutants and mercury emissions, through a significant reduction in the production, use, consumption and emissions/releases.

UNDP will also continue to support the implementation of the Montreal Protocol by assisting partner countries to set enforceable national systems to manage imports and exports and regulatory schemes and by providing them with technical and financial assistance to transform the productive base in key sectors such as foam products in construction, furniture, transportation, buildings; medical products; electronic and firefighting industry; and refrigeration/air conditioning sectors in developing countries. The conversion of eligible production lines to alternative sustainable technologies with higher energy efficiency allows these products to reach consumers. Before and post 2020, another priority for UNDP's work will be to assist countries in creating enabling conditions for ratifying and implementing the provisions of Kigali Amendment under the Montreal Protocol.

UN Environment

“Chemicals and Waste in the 2030 Agenda – Building capacity in SDG follow-up and review in developing countries”

This UNDA account funded project is to be implemented in cooperation with IOMC POs, SAICM Secretariat, BRS Secretariat, Interim Secretariat of the Minamata Convention, Ozone Secretariat, UN-Habitat, UNSC, UN EMG, and UN Regional Commissions. This project aims to strengthen the knowledge base of chemicals and waste and enhance the capacity of selected countries to track progress towards the SDGs related to chemicals and waste across sectors, in order to strengthen the evidence base for policy making and stakeholder action.

“Integrated health and environment observatories promoting legal and institutional strengthening for the sound management of chemicals in Africa – African ChemObs”

Within the implementation of the Libreville Declaration on Health and Environment in Africa, this GEF funded project aims to:

- Enable countries to meet their reporting obligations under the Basel, Rotterdam and Stockholm Conventions, and thus Sustainable Development Goal 12.4.1
- Promote evidence based policy making
- Increase investment in chemical and waste infrastructure

The ChemObs is expected to come up with additional indicators with regards to the sound management of chemicals to improve tracking of SDGs. Among its activities it will facilitate standardization, collection, analysis and interpretation of key environmental, economic and social indicators. It will develop a core set of indicators which can be used by countries to critically and objectively assess and rank a wide range of potential interventions linked to chemicals and wastes based on a set of three indexes aligned with the SDG pillars of Environment, Social and Economic Dimensions.

The “*Special Programme on institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata convention and the Strategic Approach to International Chemicals Management (SAICM)*” aims to support developing countries and countries with economies in transition in strengthening institutional capacity for the implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention and SAICM. Strengthened sound management of chemicals and wastes in the long term is essential for sustainable development. The integration of sound management of chemicals and waste in the 2030 Agenda for Sustainable Development is a major achievement.

UNIDO

The UNIDO work, support and interventions on chemicals and waste should be seen in the overall context of advancing Circular Economy. Much of the thrust is on developing recycling industries at country level. UNIDO Programs address recycling from policy development to technology transfer, concentrating on recycling of post-consumer products, metals and plastics, together with the environmental challenges throughout these recycling chains.

For waste this results in a decreased volume to be disposed, resulting in higher resources efficiency. For chemicals issues the emphasis is given to chemicals that are harmful and need to be removed before re-use, recycling or harmful emissions from recycling operations. UNIDO further advances development of innovative approaches and business models to enable a shift from hazardous chemicals to safer alternatives, as well as decrease of chemicals consumption.

The UNIDO contribution to Chemicals and Waste Management is guided by Inclusive and Sustainable Industrial Development (ISID) approaches and is in line with key Sustainable Development Goals, particularly SDG 9 on Industry, Innovation and Infrastructure; SDG 8 on Decent Work and Economic Growth, as well as SDGs 11 and 12 on Sustainable Cities and Communities and Sustainable Consumption and Production, respectively. The development of recycling industries stands at an important nexus for fulfilling these SDGs.

UNITAR

UNITAR's support to governments and stakeholders to strengthen their institutional, technical, and legal infrastructure and capacities for sound management of chemicals has direct links to many of the SDGs. For example, the UNITAR/ILO Global GHS Capacity Building Programme provides training on implementing the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), which contributes to the SDGs through supporting decent work and sustainable industrialisation. Capacity building on PCB management and strengthening waste management practices to reduce unintentional POPs emissions contributes to the SDGs by addressing, inter alia, gender equality, responsible consumption and production, and sustainable cities and communities. Additionally, UNITAR is assisting countries in assessing their national management of mercury, with a particular focus on artisanal small-scale gold mining (ASGM) management. These activities are closely related to gender equality issues (SDG 5) and good health and well-being (SDG 3), among others.

In 2016, UNITAR, in close cooperation with UN Environment, organized a workshop to discuss on the role of chemicals management on the implementation of SDGs. UNITAR is organising an additional workshop on targets and indicators that can support the achievement of the sound management of chemicals beyond 2020. UNITAR is also working closely with the UN family and receiving guidance from its Advisory Council on the 2030 Agenda to ensure that its new learning products and tools draw on the best knowledge available to support the SDGs.

WHO

In May 2017, the Seventieth World Health Assembly (WHA) approved a road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond¹¹. The WHO Secretariat was requested to prepare the road map by WHA Resolution 69.4 (2016) *The role of the health sector in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond*. The road map identifies concrete actions where the health sector has either a lead or important supporting role to play in the sound management of chemicals, recognizing the need for multi-sectoral cooperation. The actions are organised into four areas: risk reduction; knowledge and evidence; institutional capacity; and leadership and coordination.

The road map is framed as a contribution to achieving both the 2030 Agenda for Sustainable Development, and SDG 3.9, 6.1 and 12.4 in particular. The road map is intended to be a useful tool to assist WHO Member States and other health sector stakeholders in identifying areas of primary focus for engagement and additional actions relevant for chemicals management at the national, regional and international levels. It is envisaged that the various components of the health sector will define their own implementation plans for this road map, which will take into account the need to engage and cooperate with others as appropriate.

The timeline of the road map is towards the 2020 goal and beyond. Progress reports on the implementation of the road map will be made to the 72nd and 74th World Health Assemblies (2019 and 2021 respectively). In addition, the WHA requested the WHO Secretariat to update the road map according to the outcome of the intersessional process to prepare recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020.

¹¹ <http://www.who.int/ipcs/saicm/roadmap/en/>

In relation to waste, Resolution 69.4 called upon the WHO Secretariat to develop a report on the impacts of waste on health, the current work of WHO in this area, and possible further actions that the health sector, including WHO, could take to protect health. Preparation of this report is underway.

Finally, WHO is integrating chemicals and waste issues into a range of cross-cutting activities aimed at implementing the 2030 agenda, for example, on health care facilities and the Urban Health Initiative to name just two. The SDGs are also expected to feature strongly in the organization's draft General Programme of Work 2019-2023, which will be considered by WHO's governing bodies in 2018.

World Bank

The World Bank Group is actively supporting chemicals and waste management projects and policies in developing countries as part of its efforts to reduce pollution, which causes debilitating and fatal illnesses, creates harmful living conditions, and destroys ecosystems. These efforts are part of the Bank's actions to eradicate poverty and share prosperity, recognizing that pollution, including exposure to chemicals, stunts economic growth and exacerbates poverty and inequality in both urban and rural areas. Poor people, who cannot afford to protect themselves from the negative impacts of pollution, end up suffering the most.

The World Bank has a large project portfolio related to environmental health and pollution management. Between 2004 and 2017, the World Bank Group implemented 534 projects, with a total commitment of US\$ 43 billion, that directly targeted pollution management. The Bank's portfolio covers a number of activities that directly contribute reduce exposure to chemicals and waste management, including air quality management, water pollution control, POPs, pesticides management, and management of hazardous waste. In addition, the World Bank Group has a strong portfolio of active projects with solid waste management components that is also of direct relevance.

The World Bank Environment Strategy emphasizes working with Bank client countries to face the challenges of increasing air, water, and soil pollution as well as the challenges of legacy pollution.¹² The Strategy foresees a focus on addressing legacy pollution resulting from past industrial activities, and water basin cleanup including agricultural runoff, with global transboundary impacts of hazardous chemicals continuing to be a priority.

The World Bank provides assistance to developing country partners related to chemicals and waste management through Bank lending programs, mobilization of GEF and other grant resources, analytical and advisory services, dedicated technical assistance and capacity building trust funds, and through application of its environmental safeguards policies, performance standards, and the recent environmental and social standards.¹³ The standard on Resource Efficiency and Pollution Prevention and Management establishes the applicable provisions on management of chemicals and hazardous materials, and pesticides.¹⁴ The standard on Community and Health Safety guides efforts to avoid or minimize the potential for community exposure to hazardous materials and substances, and establishes requirements for emergency preparedness and response to address risks such as potential leaks or spills of hazardous materials.¹⁵

As an Implementing Agency of the Global Environment Facility, the Bank relies on its comparative advantage for investments to bring about on-the-ground risk reduction. The World Bank's POPs

¹² <http://www.worldbank.org/en/topic/environment/publication/environment-strategy-toward-clean-green-resilient-world>

¹³ <http://www.worldbank.org/en/programs/environmental-and-social-policies-for-projects/brief/the-environmental-and-social-framework-esf#policies>

¹⁴ <http://documents.worldbank.org/curated/en/383011492423734099/pdf/114278-WP-REVISED-PUBLIC-Environmental-and-Social-Framework.pdf#page=53&zoom=80>

¹⁵ <http://documents.worldbank.org/curated/en/383011492423734099/pdf/114278-WP-REVISED-PUBLIC-Environmental-and-Social-Framework.pdf#page=59&zoom=80>

portfolio addresses the closure of production of toxic chemicals, identification and promotion of alternative technologies and practices, investments in Best Available Techniques/Best Environmental Practices, and environmentally sound destruction of toxic stockpiles and wastes.

By improving environmental conditions for health, the Bank directly contributes to SDG 3 “Good Health and Well-being”, and indirectly to all other SDGs. Bank projects have improved the management of solid and hazardous waste and wastewater, which are strongly linked with SDG 6 Clean Water and Sanitation, SDG 11 Sustainable Cities and Communities, and SDG 13 Climate Action. The World Bank’s pollution-targeted portfolio contains a sizable share of interventions that address toxic substances in the form of industrial waste, which is part of SDG 9 Industry, Innovation and Infrastructure. The Bank also targets agrochemicals and pollution from agricultural runoff, which is linked with SDG 2 Zero Hunger.

Examples of the Bank’s actions include the following: in Zambia, a Bank loan is assisting the Government to reduce environmental health risks to the local population in critically polluted mining areas in Chingola, Kabwe, Kitwe, and Mufulira municipalities, including lead exposure in Kabwe municipality. In Morocco, the World Bank has supported the modernization of waste management, including at sites like Oum Azza, near Rabat, where traditional trash-pickers now operate a recycling collective in improved conditions. In Africa, a \$25 million program has removed over 3,000 tons of obsolete and dangerous pesticides from close to 900 contaminated sites in Ethiopia, Mali, Tanzania, Tunisia and South Africa. The Bank’s website on reducing pollution includes information about its strategy, portfolio and pipeline on hazardous waste management.¹⁶

OECD

The OECD’s work on risk assessment and risk management of chemicals is applicable to any type of chemical, independent of their use and addresses environmental protection (all media) as well as worker and consumer safety (including the safety of children). The work is therefore not only contributing to meeting Sustainable Development Goal (SDG) 12 and specifically Target 12.4 on the sound management of chemicals but also Target 3.9 on reducing deaths from pollution and Target 6.3 on water quality.

In addition, a number of specific programmes contribute to other SDG targets:

- The programme on pesticides and sustainable pest control contributes to Target 2.4 on sustainable food production.
- The programme on chemical accident prevention, preparedness and response contributes to Targets 12.4, 3.9 and 6.3, but also Target 11.5 on reducing the impact of disasters.
- The programme on Pollutant, Release and Transfer Registers, in addition to contributing to pollution reduction, contributes to Target 12.5 on the reduction of waste generation.

The core activities of the OECD to meet these targets are to:

- develop harmonised test and non-test methods and assessment methodologies, that are in line with the latest scientific developments;
- increase the accessibility, understanding and sharing of information on the properties of chemicals and their uses as well as tools to assess potential alternatives;
- promote the convergence of the identification of risk management options and applied risk management approaches;
- foster collaboration on methods for priority setting to gain efficiencies in using limited resources for in-depth risk assessments;

¹⁶ <http://www.worldbank.org/en/topic/environment/brief/pollution>

- assist countries that wish to set up or improve their management systems for “industrial chemicals”;
- maintain and further develop a robust body of legal instruments for the sound management of chemicals and waste and assist Member and Partner countries with their implementation;
- promote sustainable chemistry by investigating what elements of sustainable chemistry could complement chemicals management systems and what policies are efficient to increase the impact of those elements;
- mainstream the sound management of chemicals into other policy areas, such as water quality, waste management/material recovery or corporate governance;
- develop policy responses and technical tools for the sound management of novel materials (e.g. from synthetic biology) and for addressing newly recognised hazards of chemicals;
- facilitate the use for regulatory decision-making of the exponentially increasing amount of results from high through-put test methods and predictive computer modelling.

Appendix 1 - Indicative Table of IOMC PO activities in the SDGs for Sound Chemicals and Waste Management

The following table provides an indicative mapping of IOMC PO activities in the various SDGs.

Organizations with a lead role with respect to chemicals and waste management related activities for a given goal are marked with a red X.

Organizations that contribute to or have some activities related to chemicals and waste management aspects within a given goal are marked with a black Y.

SDG / IOMC PO	FAO	ILO	UNDP	UNEP	UNIDO	UNITAR	WHO	WB	OECD
1. No Poverty	X	Y	Y	Y				Y	
2. Zero Hunger	X			Y					Y
3. Good Health & Well-being	Y	Y	X	Y	Y	Y	X		X
4. Quality Education	Y							Y	
5. Gender Equality	X		Y		Y	Y	Y	Y	
6. Clean Water and Sanitation	Y	Y		Y		Y	X	Y	X
7. Affordable and Clean Energy	Y	Y	Y	Y	Y		Y	Y	
8. Decent Work and Economic Growth	Y	X		Y	Y	Y	Y	Y	
9. Industry, Innovation, and Infrastructure			Y	Y	X	Y		Y	
10. Reduced Inequalities	Y							Y	
11. Sustainable Cities and Communities	Y	Y	X	Y	Y	Y	Y		Y
12. Responsible Consumption and Production	X	Y	X	X	Y	Y	X		X
13. Climate Action	Y	Y	X		Y	Y	Y	Y	
14. Life Below Water	Y	Y	X	Y	Y				
15. Life on Land	Y	Y	X	Y		Y			
16. Peace, Justice, and Strong Institutions		Y							
17. Partnership for the Global Goals	Y		X	Y	Y	Y		Y	



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**Strategic Approach
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Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

**A submission from the United Nations Environment Programme:
United Nations Environment Assembly resolutions on marine
litter and microplastics and the relevance to the Strategic
Approach to International Chemicals Management**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a submission from United Nations Environment Programme on the United Nations Environment Assembly resolutions on marine litter and microplastics and the relevance to the Strategic Approach to International Chemicals Management. The document is presented in the annex as received from the United Nations Environment Programme and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Briefing note on the United Nations Environment Assembly resolutions on marine litter and microplastics and relevant to the Strategic Approach to International Chemicals Management

This briefing note highlights the key issues relevant to the implementation of the UN Environment Assembly resolutions on marine litter and microplastics (UNEP/EA.1/6, UNEP/EA.2/11, UNEP/EA.3/7 and UNEP/EA.4/L.7).¹

1) Background

The United Nations Environment Programme has since 1995, through the Global Programme of Action for the Protection of Marine Litter on Land-based Activities and the Global Partnership on Marine Litter (2012) has been a leading actor in the global and normative efforts to reduce marine litter and microplastics and assisting developing countries in developing their responses and prioritize policies and measures at the appropriate scale to avoid marine litter and microplastics from entering the marine environment. A priority area of focus is the implementation of the four marine litter resolutions adopted by UN Environment Assembly namely 1/6: Marine plastic debris and microplastics (2014); 2/11: Marine plastic litter and microplastics (2016); 3/7: Marine litter and microplastics (2017); and 4/L.7 Marine plastic litter and microplastics (2019). The Global Partnership on Marine Litter has been highlighted as a key platform for improved coordination and cooperation and the most recent resolution took note of the framework document of the partnership².

The third session of the UN Environment Assembly stressed the importance of a zero vision i.e. long-term elimination of discharge of litter and microplastics to the oceans and of avoiding detriment to marine ecosystems and the human activities dependent on them from marine litter and microplastics. It further urged all actors to step up actions to “by 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution”. An Ad hoc open-ended experts group on marine litter and microplastics was established to provide options for future work to the fourth session of the UN Environment Assembly³. Amongst the options identified for enhanced coordination and governance, the group proposed:

- a. Consider strengthening coordination at the global level through existing partnerships and mechanisms working on marine litter and related issues, such as the Global Partnership on Marine Litter and the **Strategic Approach to International Chemicals Management**, and broadening their scope; and, if necessary, consider the feasibility and effectiveness of a potential new coordinating structure building on existing initiatives;

The experts agreed that there was a need to strengthen the science-policy interface at the international level and to do more to support evidence-based approaches, improve understanding of the impacts of plastic litter on the marine environment, and promote local, national, regional and global action to eliminate marine litter. Options included:

- b. Consider modalities for the establishment of a global knowledge hub which could, inter alia, make it possible to develop harmonized monitoring methodologies; to collect, collate and openly share global monitoring data and information from all actors and sources, including citizen science; to ensure access to robust, reliable science and sound scientific practices, **such as on additives**;
- c. Explore an interagency examination of **health** and environmental aspects in relation to marine litter and microplastics and plastic with a source-to-sea approach as well as an examination of costs and benefits in relation to job transition;
- d. Consider preparing a compendium of relevant existing and planned industry initiatives, including on product design, standards, innovation, production quantities **and additives**, to enhance transparency and calibrate partnership opportunities, as well as examples of existing national-level actions such as extended producer responsibility (EPR) to supplement the compendium.

¹ The UNEA 4 resolution on marine litter and microplastics (UNEP/EA.4/L.7) may be found at the following link: <http://web.unep.org/environmentassembly/ministerial-declaration-resolutions-and-decisions-unea-4>

² https://papersmart.unon.org/resolution/uploads/k1900241_-_framework_document_for_the_gpml_-_advance.pdf

³ <https://papersmart.unon.org/resolution/uploads/k1804167.pdf#overlay-context=pre-session-unea4>

The fourth session of the UN Environment Assembly held in March 2019 adopted resolution 4/L7 (Annex 1) which requested UNEP to:

Operative Paragraph 2: within available resources and benefiting from the work of relevant existing mechanisms, to immediately strengthen scientific and technological knowledge with regard to marine litter including marine plastic litter and microplastics through the following activities: (a) Convening existing relevant science advisory initiatives with input from the Member States, as appropriate, to provide input into the activities under paragraph 3 and 7; (b) Compiling available scientific and other relevant data and information to prepare an assessment on sources, pathways, **and hazards** of litter including plastic litter and microplastic pollution and its presence in the rivers and oceans, scientific knowledge about adverse effects on ecosystems, **potential adverse effects on human health** and environmentally sound technology innovations; (c) Recommending indicators to harmonize monitoring, report and assess methodologies, taking into account the key sources of marine litter including plastic litter and microplastics in cooperation with relevant international organizations; (d) Gathering information with a view to inform policies and action on environmentally sound technological innovations, options and measures for reducing risks of discharges of litter including plastic litter and microplastics to the marine environment taking into account the whole life-cycle of plastics, in support of local, national, regional and global action;

Operative Paragraph 3: strengthen coordination and cooperation by establishing, within available resources, and building on existing initiatives, a multi-stakeholder platform within UNEP, to take immediate action towards the long-term elimination of discharges of litter and microplastics through a life cycle approach, into the oceans. This may include the following functions: (a) Serving as a forum for governments, industry, academia, civil society, and other stakeholders to share experiences and coordinate action, either on a regular or ad hoc basis; (b) Serving as a repository for: assessments on how land and sea-based sources of marine litter including plastic litter and microplastics are addressed at national, regional and international levels, conceptual and practical guidance materials for governments, organizations, and private entities to address aspects of marine litter; and current action plans, management practices, and guidelines for enabling, enhancing and supporting action to prevent discharge of litter, including plastic litter and microplastics, into the marine environment; (c) Raising global awareness of the issue with a wide variety of audiences, such as governments, policy-makers, resource managers, educators, private sector entities, and the public; (d) Establishing and maintaining a database of technical and scientific information related to marine litter, such as inventories of discharges to the marine environment, scientific studies, and innovations to address marine litter; (e) Promoting collaboration among relevant existing science mechanisms to facilitate access to available scientific data and information to disseminate sound scientific practices, such as guidelines for the sampling and analysis of marine macro-plastics and microplastics and to improve policy relevance of research; (f) Promoting action in Regional Seas Conventions and Programmes, within available resources, to address marine litter through action plans, protocols, partnerships, and other activities;

Operative Paragraph 10: through its 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, to elaborate guidelines on plastic use and production in order to inform consumers, including on standards and labels, to incentivize businesses and retailers to commit to sustainable practices and products, and to support governments to promote the use of information tools and incentives to foster sustainable consumption and production;

Operative Paragraph 7: Decides to extend until UNEA-5 the mandate of the Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics created by resolution UNEP/EA.3/res.7, building on its previous work, to: (a) Take stock of existing activities and actions towards long-term elimination of discharges into the oceans, to reduce marine plastic litter and microplastics by governments, relevant global and regional instruments and international organizations, the private sector, Non-Governmental organizations and other relevant contributors; (b) Identify technical and financial resources or mechanisms for supporting countries in addressing marine plastic litter and microplastics; (c) Encourage partnerships as well as increased cooperation in relations to the prevention of marine litter including plastic litter and microplastics that undertake activities, such as development of source inventories, improvement of waste management, awareness raising, and promotion of innovation; (d) Analyse the effectiveness of existing and potential response options and activities on marine litter and microplastics at all levels to determine the contribution in solving the global problem;

Operative Paragraph 8: Invites the Environment Management Group (EMG) to engage in and contribute to the Ad Hoc Open-ended Expert Group on Marine Litter and Microplastics by providing inter alia a mapping of all relevant United Nations agencies, programmes, initiatives and expertise with relevance to marine litter including plastic litter and microplastics;

2) Potential relevance to the Strategic Approach to International Chemicals Management (SAICM).

While the scope of SAICM today is broad and currently does not expressly address marine plastic litter or microplastics, there are opportunities for cooperative action, including in scientific information, lifecycle assessments and circularity, addressing chemicals additives in plastics, engagement with downstream user along the plastic value chain, capacity building and in promoting innovation in plastic product design. Emerging policy issues related to endocrine-disrupting chemicals, nanomaterials and the promotion of chemicals related information within product value chains are relevant to aspects of marine litter and microplastics management and prevention.

There is also relevance in relation to the broader management of chemical additives used in the manufacturing of plastics and end-of life processes (e.g. recycling).

SAICM stakeholders may wish to consider (in close coordination with relevant chemicals and waste related conventions, initiatives and policy approaches):

- 1) Contributing information to and be involved in strengthening scientific and technological knowledge with regard to marine litter including marine plastic litter and microplastics by: (a) Recommend relevant existing science advisory initiatives as appropriate to provide input into the activities under paragraphs 3 and 7 of the UNEA resolution; (b) Engage in the preparation of the assessment on sources, pathways, **and hazards** of litter including plastic litter and microplastic pollution, **potential adverse effects on human health** and environmentally sound technology innovations;
- 2) Continue to engage in the meetings of the Ad hoc open-ended experts group with input from a broader chemicals management perspective;
- 3) Continue to share information on work relevant to marine litter and microplastics through for example the online platform outlined in operative paragraph 3 and the mapping planned under operative paragraph 8;
- 4) Joining⁴ and consider coordination activities through e.g. the Global Partnership on Marine Litter as highlighted in resolutions 1/6, 2/11 and 3/7;
- 5) Address the linkages between plastic pollution being a land and sea-based issue and marine plastic litter.
- 6) Consider the issue of marine litter, including marine plastic litter and microplastics and its relevance in the context of SAICM and the sound management of chemicals and waste beyond 2020;
- 7) Reflect on any potential role of the SAICM secretariat on the issue of marine litter including marine plastic litter and microplastics.

⁴ <http://marinelitternetwork.com/join-us/>



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**Progress towards the achievement of the 2020 overall
objective of the sound management of chemicals**

**ICCA-UN Environment Symposium on Sound Management of
Chemicals and Waste and the Circular Economy
11 – 13 September 2018, Chengdu, China**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the International Council of Chemical Associations (ICCA) and UN Environment on the Symposium on Sound Management of Chemicals and Waste and the Circular Economy held from 11-13 September 2018 in Chengdu, China. The report is presented in the annex as received from the ICCA and UN Environment and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

ICCA-UN Environment Symposium on Sound Management of Chemicals and Waste and the Circular Economy 11 – 13 September 2018, Chengdu, China

Executive Summary

Circular economy aims to ensure products, components, and materials are continuously cycled at their highest utility and value at all times. It also aims to decouple economic growth from the consumption of finite resources and environmental impacts. There are many facets and different perspectives in how to achieve a more circular global economy. Some argue that a circular approach means an increased use of waste as raw materials, while others define circularity as an increased use of bio-based raw materials. Others will focus on innovative design to enhance recyclability or durability. Thus, there is a need to better understand what constitutes a circular economy in practice.

To this end, UN Environment and the International Council of Chemical Associations (ICCA), held a Symposium on Sound Management of Chemicals and Waste and the Circular Economy, with support from the Chinese Petrochemical and Chemical Industry Federation (CPCIF), from 11 to 13 September 2018 in Chengdu, China.

The Symposium aimed at coming to a common understanding of circular economy and how facilitating circularity is closely intertwined with sound management of chemicals and waste. To fully achieve a circular economy, new business models, technologies, and financing models are required. The Symposium provided practical examples for governments and industry on how to facilitate and implement more circular approaches, while also identifying enabling policy conditions to scale up circular approaches. The Symposium also helped to define roles and responsibilities for key stakeholders. However, participants agreed there was no “one size fit all” model for achieving a circular economy. Based on the discussions throughout the three-day Symposium, participants identified the following enabling conditions that need to be put in place to realize a circular economy:

1. **The importance of education and awareness raising:** especially for consumers, but also to ensure that scientists involved in R&D are connected with the policy experts to enhance understanding each other’s perspectives and goals;
2. **A circular economy can only be realized if a sound management of chemicals and waste is in place;** Compared to a linear system, a circular economy requires even more that knowledge and information on substances, including those contained in products must be shared;
3. **A circular economy needs collaboration at different levels;** collaboration over the value chain, collaborative innovation setups involving academia, industry, governments, financial sector and other key stakeholders. Article manufacturers, brand owners, and the informal local communities should not be overlooked;
4. **Enabling policies** that take a holistic view and consider all stages of a product life are needed, including a closure of loops at the end-of life, while being transparent, risk-based, and flexible in nature.
5. **Leadership from all stakeholder groups** at different levels is necessary (e.g. governments, CEOs) – circular economy needs champions.

This document provides an overview of the Symposium discussions, conclusions, and recommended next steps.

Overview of Event

Over 65 organizations and representatives attended the three-day event. Participants included a broad range of Strategic Approach to International Chemicals Management (SAICM) stakeholders and sectors (e.g. governments, industry, NGOs) with expertise on issues related to the circular economy. ICCA member companies presented case studies showcasing business models that contribute to a circular economy, challenges that must be overcome to enable circular models, and the role of circularity within a sustainability and sound chemicals management context. In addition, intergovernmental organizations and government representatives from various regions, including China, the Netherlands, Canada, the Philippines, and the European Commission provided perspectives on how industry and governments can work together to facilitate circular business models.

Discussion Highlights

Participants engaged in rich discussions on the linkages between chemicals and waste management and circularity. Throughout the discussions, four general themes emerged: 1) ensuring a common understanding of what is circularity and a circular economy; 2) improving capacities in the recycling industries; 3) enabling policies and conditions that promote circularity; and 4) enhancing connections and education among researchers, policy experts, industry, and governments. The discussions identified opportunities and challenges for the chemical and waste industries in a more circular economy.

Successful & Innovative Business Models

Participants highlighted the following contributing factors to establishing successful, innovative, and circular business models: free markets and competition, profit and job creation, effective environmental legislation and related policies and enforcement of such policies, investments in Research & Development, and pursuing new partnerships with various stakeholders.

Participants provided case studies of innovative business models, such as waste-to-chemicals processes, and the use of mass balance techniques, while discussing challenges they overcame to implement such models. Some of the challenges discussed included how to create economic incentives for more sustainable or circular feedstocks and products and how to encourage companies to pursue new business models, partnerships, and invest in technologies that may create more circular technologies and processes.

Enabling Policy Environment

Focusing on enabling policy conditions and infrastructure, participants identified there is a need to develop policies that promote new circular solutions and waste management infrastructure. At every level of government – from global institutions to local governments – there should be cooperation between government agencies to streamline policies. This is particularly important to improve alignment in waste management policies (e.g. definitions) and cooperate to invest in waste management infrastructure. Furthermore, the participants identified the following policy elements to facilitate progress towards a more circular economy:

- Legislation and effective policies to improve transparency and communication on products and materials and recyclability throughout the value chain for information sharing and identifying potential collaboration activities.
- Policies to enhance life-cycle approaches and identify holistic solutions that consider the design and production phase, midstream (consumption and reuse) and downstream phases (disposal and recycling).
- Increase government coordination with all actors of the value chain and prioritize actions in the value chains, based on potential impact and feasibility of implementation.
- Policies to incentivize and promote acceptance of new processes and technologies, such as mass balance, chemical recycling, renewable material use, etc.
- Regarding the stakeholder engagement and the roles and responsibilities of different stakeholders, participants discussed that leaders of governments, international institutions, and industry throughout the

value chain, should champion circular economy approaches and need to take a leadership role. Participants also discussed that governments should be better sensitized to the benefits of circularity and that policy developers and agencies should strive to engage all ministries/agencies to understand the systemic value of circularity while also avoiding any potential unintended consequences.

Defining Circularity

The Symposium allowed participants to identify potential project and activities to advance circularity globally. Most notably, it was through these discussions that participants discussed the meaning of circular economy. Participants agreed that the term and meaning of “circular economy” will continue to evolve and means something different to each individual stakeholder, making it difficult to identify one definition. Therefore, it is essential to raise awareness throughout society and with consumers, while continuing to advance circular technologies and processes. However, participants were able to come to a common understanding in that a circular economy is one in which resources and materials are continuously cycled to eliminate waste while creating value for all.

Once a general understanding was reached, participants discussed the drivers for both industry and governments to change from traditional business and policy models to more flexible, yet effective models that facilitate innovation. Below is a summarized list of the tangible ideas and activities generated to drive progress towards a circular economy:

- **Material flow analysis for priority components and material streams.** This would allow to prioritize actions, and act as a starting point for identifying action for business. Though no inventory of materials exists, this is not reason not to act now. ICCA and UN Environment are to consider how to make this happen, and one example provided is through the International Resource Panel.
- **Online platform to help identify materials and products that are in local waste streams, including the potential for material/product reuse, recycling, and recovery.** Materials management is key to driving circularity, connecting value chains and developing circular solutions. The suggested stakeholders to undertake this work were national governments, jointly with the academia. It was noted that a challenge to this will be to ensure confidential business information (CBI) is protected.
- **Waste management** is a priority for enabling circularity. There is a need to identify the factors to improve waste management in different countries, and that could be done by bringing together governments and industry leaders, while industry associations could be utilized to facilitate discussions and build relationships and partnerships.
- **Awareness building and curriculum development** for various student levels is an opportunity to enhance knowledge on circularity and policies could help connect academics, policy makers, and industry.
- **Innovative collaborations** by stimulating market supply and demand forces of circular products and materials. To do so, engagement needs to include the financial sector, as it can serve as a facilitator. Another opportunity is to pursue Public-Private Partnerships (PPPs) to create basic drivers and incentives, identify circularity champions and develop infrastructure for circularity.

Conclusion and Next Steps

The Symposium identified circularity as a tool to achieving progress towards all of the Sustainable Development Goals and greater overall sustainability. The Symposium confirmed that the circular economy is a journey that has the potential to identify solutions to waste management and other resource challenges, as well as a new pool of growth and opportunities.

Participants stressed that a practical approach should be taken as circularity begins from the design stage, and that better communication on chemicals throughout the value chain is needed. Experiences showed that to close the loops, changes in the waste policies are also required. The participants also noted that progress towards the circular economy must include the responsible use of natural resources and redesign of products, but also enable reuse, repurposing, recycling and recovery of value locked materials that may traditionally be viewed as waste.

A common understanding was also reached, defining a circular economy as one in which resources and materials are continuously cycled to eliminate waste while creating value for all. Additionally, when looking at facilitating circularity, we need to ensure it is in the context of broader sustainability.

Participants agreed the Symposium should only be the beginning of the multi-stakeholder discussions regarding circular economy. Participants discussed holding future events to identify and initiate innovative circularity projects. Additionally, in order to relay knowledge and to gain greater momentum to facilitate progress towards a more circular economy, this outcome document is intended to feed into the SAICM and the sound management of chemicals and waste beyond 2020 intersessional process and the fourth session of UNEA.



SAICM/OEWG.3/INF/18



**Strategic Approach
to International
Chemicals Management**

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Third meeting

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Item 4(a) of the provisional agenda*

**Progress towards the achievement of the 2020 overall
objective of the sound management of chemicals: 2014-
2016 progress report**

**Proposal by the Organisation for Economic Co-operation
and Development (OECD) for a new Inter-Organization
Programme for the Sound Management of Chemicals
(IOMC) indicator for measuring progress with the sound
management of chemicals and waste**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Organisation for Economic Co-operation and Development (OECD) on a new Inter-Organization Programme for the Sound Management of Chemicals (IOMC) indicator for measuring progress with the sound management of chemicals and waste. The report is presented in the annex as received from the OECD and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Proposal by the Organisation for Economic Co-operation and Development (OECD) for a new Inter-Organization Programme for the Sound Management of Chemicals (IOMC) indicator for measuring progress with the sound management of chemicals and waste

Following the publication by the IOMC of a number of simple indicators to measure progress with the implementation of SAICM, the present document outlines a proposal for the OECD to develop and maintain an additional IOMC indicator: number of countries that have legislation in place to manage industrial and consumer chemicals.

Background

1. Following a proposal made at ICCM4 in 2015, the IOMC has published a number of indicators of progress in implementing SAICM [see http://www.who.int/iomc/indicators_saicm/en/]. These are:

- Number of countries with National Profiles (UNITAR)
- Number of countries with a PRTR (UNITAR)
- Number of countries with Poisons centres (WHO)
- Countries with controls for lead in decorative paint (WHO and UNEP)
- Number of countries that have achieved core capacities for chemicals under the International Health Regulations (WHO)
- Number of parties to the Basel Convention
- Number of parties to the Rotterdam Convention
- Number of parties to the Stockholm Convention
- Number of parties to the Minamata Convention
- Countries which have implemented pesticide legislation based on the FAO/WHO International Code of Conduct (FAO)

2. Work is underway to add further indicators, for example on the GHS. There is currently no IOMC indicator for measuring the progress in countries with setting up management systems specifically dedicated to managing the risks of industrial and consumer chemicals, i.e. chemicals which are not covered by specific legislations such as pesticides or pharmaceuticals¹. Also the indicators used by the SAICM Secretariat to track progress with SAICM implementation do not specifically address industrial and consumer chemicals. The present document outlines a proposal for developing such an indicator.

On-going efforts to develop Objectives and Targets/Milestones for the sound management of chemicals beyond 2020

3. In the context of developing a new international framework for the sound management of chemicals and waste, the SAICM Secretariat has proposed objectives and milestones for the [11 basic elements](#) recognized as critical at the national and regional levels to the attainment of sound chemicals and waste management, and in particular for: "(a) Legal frameworks that address the life cycle of chemicals and waste"²:

¹ "Industrial" chemicals are defined by default as all chemicals that are NOT managed through legislations dedicated to specific uses, such as pharmaceuticals, pesticides, biocides etc. It also covers consumer uses (such as the use of paints) that are not managed by specialised legislations. To avoid the impression that industrial chemicals are chemicals that are only used in industrial settings, they are called "industrial and consumer chemicals" in the present document.

²http://www.saicm.org/Portals/12/Documents/meetings/IP2/IP_2_8_OBJECTIVES%20AND%20SDG.pdf

Objective	Related Milestones/Targets
Legal frameworks that address the life cycle of chemicals and waste.	1a. Countries have basic policies and legislation in place to manage chemicals and waste throughout the life-cycle. 1b. Countries have developed and are implementing mechanisms to review, update, and strengthen their policy, legislative and regulatory frameworks in light of national priorities and international commitments, with stakeholder involvement. 1c. Countries have functional compliance and enforcement mechanisms in place, and are implementing procedures to review, update, and strengthen those mechanisms

4. While this objective and the related Milestones/Targets have not been adopted yet, it is likely that a similar version will emerge during the negotiations³.

5. As in the proposal above, “chemicals” covers all types of chemicals, including pesticides, biocides as well as industrial and consumer chemicals, it is likely that different indicators for different types of chemicals will need to be developed. The FAO is already maintaining an indicator for the number of countries that have implemented pesticide legislation based on the FAO/WHO International Code of Conduct. Furthermore, as chemicals management and waste management is usually covered by different legislations in countries, it is likely that separate indicators would need to be developed for measuring the number of countries that have implemented appropriate waste management systems. Further work could also be done in the future on how countries take into consideration the chemicals and waste interface.

Number of countries that have a legislatively mandated system to manage industrial and consumer chemicals

6. The implementation of the GHS is a very effective measure for reducing the risks from any type of hazardous substances handled at the workplace and/or used by consumers.

7. To complement the impact of the GHS for the reduction of risks from industrial and consumer chemicals, many countries have implemented legislation allowing them to prioritise chemicals for risk management, perform a risk assessment on priority chemicals and implement, if needed, risk reduction measures based on the outcome of the risk assessment. Unfortunately, many countries still lack such legislation for industrial and consumer chemicals and cannot manage the risks of chemicals that have been recognised as needing risk reduction measures in other countries (e.g. chemicals listed on Annex III of the Rotterdam Convention).

8. Recognising the gap in legislation, many countries have started to initiate legislative processes to set up or improve their chemicals management system. To measure worldwide progress with addressing the potential risks from using industrial chemicals it is proposed to develop the following indicator:

- Number of countries that have legislation in place to manage industrial and consumer chemicals

9. Such an indicator would be in line with other IOMC indicators of progress in implementing SAICM and could be one of several indicators measuring progress with meeting milestone 1a proposed by the SAICM Secretariat (see table above)

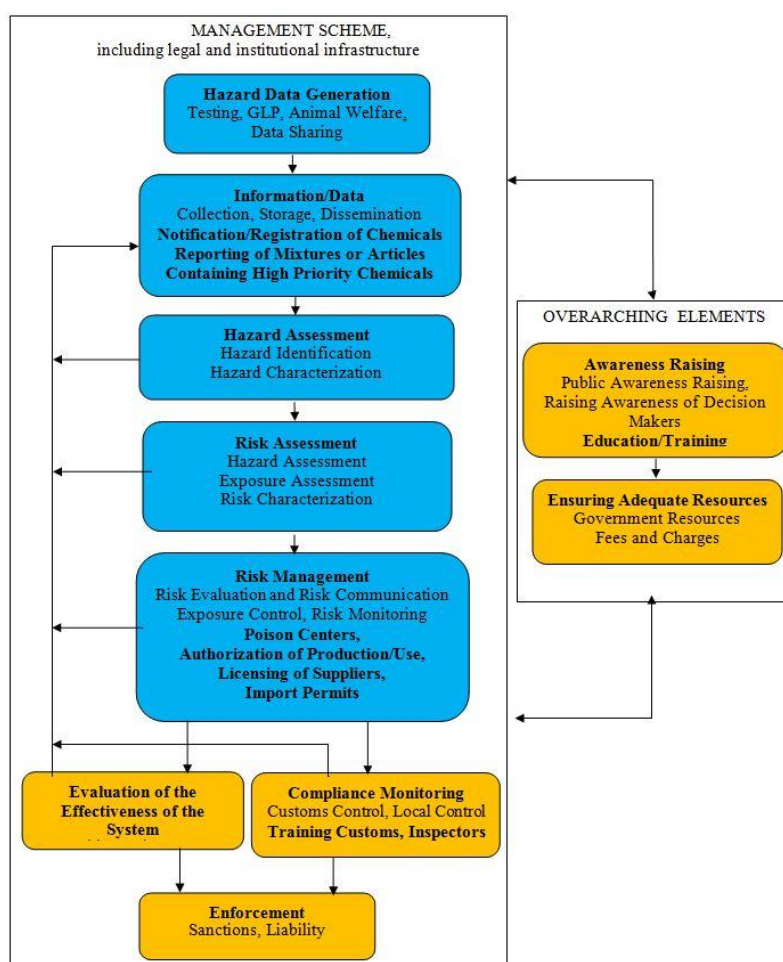
³ A similar milestone was proposed in a thought starter by the EU: “By 2025, countries have legal frameworks that define responsibilities and address risk reduction and prevention or minimisation of impacts through the life cycle of chemicals and waste and include relevant enforcement and compliance mechanisms.”;

<http://www.saicm.org/Portals/12/documents/meetings/IP2/Draft%20thoughtstarter%20on%20Objectives%20and%20Milestones%20-%20IP2.docx>

How to qualify as managing industrial and consumer chemicals?

10. The OECD has developed extensive guidance for establishing or improving an industrial and consumer chemicals management system as part of the [IOMC Toolbox for decision-making in chemicals management](#). Such a system is usually made up of a number of elements as outlined in figure 1 [see [ENV/JM/RD\(2014\)2/REV2](#)].

Figure 1. Relation of the elements of a framework for the management of industrial and consumer chemicals

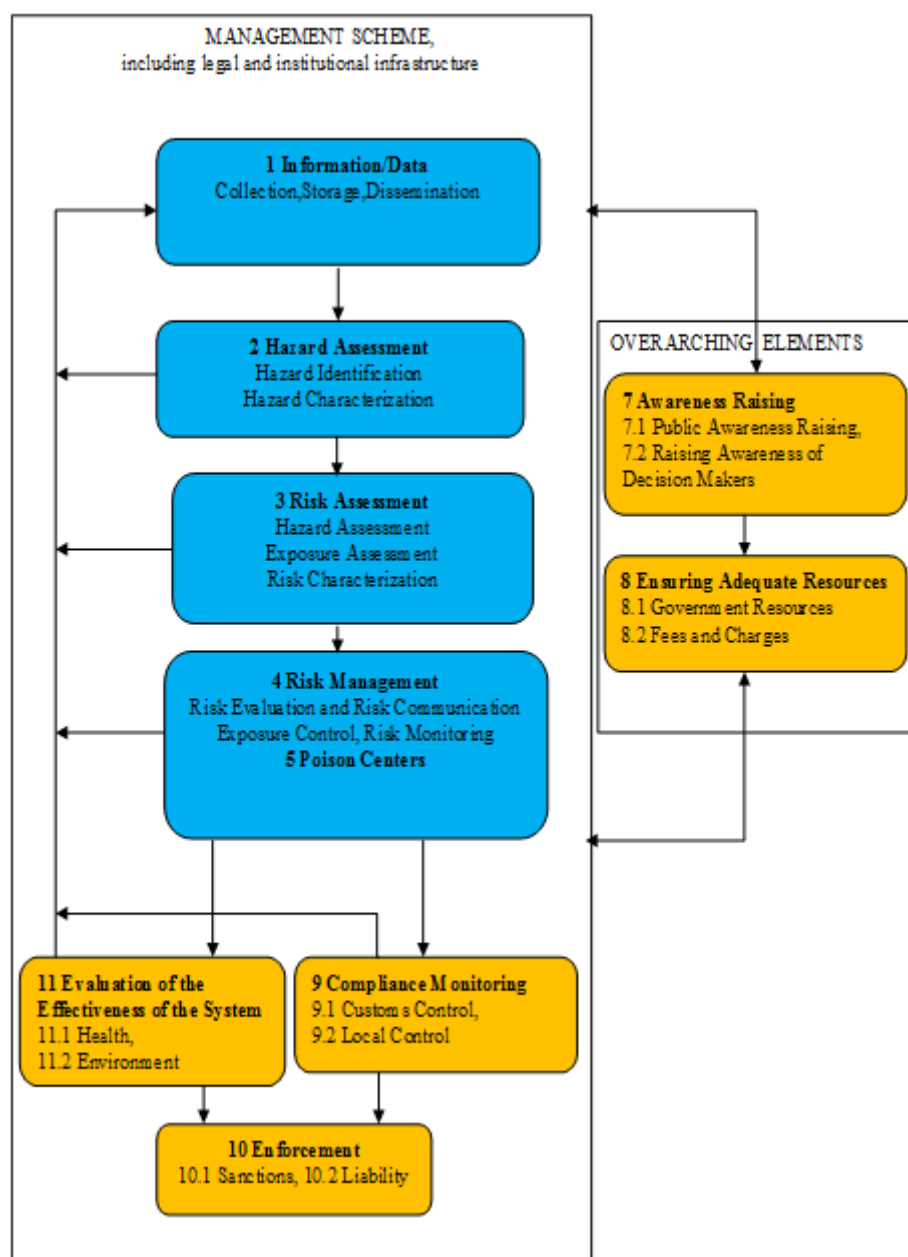


Note: technical elements in blue and functioning elements in orange (bold: elements, normal: sub-elements)

11. More detailed explanations of the different technical and functional elements of this scheme are provided in Annex A. Note that the implementation of the GHS can be considered to be an integral part of a system for managing industrial chemicals, in many countries the implementation of GHS is covered by separate legislation. Hence a separate IOMC indicator is available to measure GHS implementation in countries.

12. As part of this scheme, the IOMC has also defined a “low resource” or “core” framework for a developing country. This low resource framework is a system with the basic key elements that can be implemented with low resources. The relations of the elements of such a core framework are described in Figure 2.

Figure 2. Relation of the key elements of a core framework for the management of industrial and consumer chemicals



Note: key technical elements 1 - 5 in blue and key functional elements 7 — 11 in orange (bold: elements, normal: sub elements)

13. It is proposed that the indicator counts countries that have implemented a legislatively mandated management system that covers the technical elements of such a core framework. It is clear that the functional elements are very important as well to ensure the operation of the framework. Nevertheless, to keep reporting by countries manageable, it is proposed that, for the time being, the indicator only covers the technical elements. Furthermore, the element on poison centres is already covered by another IOMC indicator maintained by WHO. It is therefore proposed to omit this element from the new proposed indicator. A separate indicator covering the functional elements could be developed in the future. It would be in line with milestone 1c proposed by the SAICM Secretariat (see table above).

14. Developing risk assessments for individual chemicals or groups of chemicals requires considerable expertise and resources. To save resources it is important that countries cooperate and as much as possible and use what has already been performed in other countries. It is therefore proposed that countries also qualify if they implement risk management measures based on:

- risk assessments (fully or partially) performed in other countries;
- screening risk assessments; or
- generic risk assessments (e.g. certain combinations of hazards and uses for which a high probability of risk for human health or the environment is predicted, such as carcinogens in certain consumer preparations).

Proposed next steps

15. This proposal will be submitted to the 3rd Open-Ended Working Group of the International Conference on Chemicals Management, which will be held in April 2019.

16. To evaluate whether countries qualify as having a legislatively mandated industrial and consumer chemicals management system in place, national SAICM focal points would be contacted to provide information according to a simple questionnaire and information sheets would be developed and published after approval by national authorities. A draft of the information sheet, together with two examples, is outlined in Annex B. The information sheets could be made available through an interactive map on the internet, similar to the presentation of other IOMC indicators.

17. The establishment of a functioning industrial and consumer chemicals management system is part of the legal instruments developed by the OECD. The OECD could therefore establish and maintain the indicator and periodically report on progress (e.g. once every two years). A baseline report could be presented at the 5th International Conference on Chemicals Management in 2020.

Elements of a framework for the management of industrial chemicals [source: [ENV/JM/RD\(2014\)2/REV2](#), updated following further comments from countries]

Key elements with technical content

1 Information/Data

Description: Information/Data contains three sub elements – Information/Data Collection, Information/Data Storage and Information/Data Dissemination. It provides the government with information about chemicals production, use, import/export of chemicals as well as other information and data relevant for consumer, worker and environmental safety including GHS classifications and labels, emergency management and safety plans. The information needs to be stored and the access to the information has to be organized in a way that provides access when needed/warranted while also protecting confidential business information from unauthorized disclosure.

Relation to other elements: Information on production and use and import/export can be used for Exposure Assessment in **Risk Assessment**, for priority setting in **Risk Assessment** and **Risk Management** and **Compliance Monitoring** of obligations by industry. Information and data relevant for consumer, worker and environmental safety can be used for **Hazard Assessment**, **Risk Assessment** and **Risk Management**, for setting priorities in **Risk Management** and for requesting information through additional elements - **Authorization of Production/Use** or **Licensing of Suppliers** or **Import Permits** for health/environmental reasons as well as for **Raising Awareness of Decision Makers and Public Awareness Raising**, and **Education/Training of the Public and Workers**. Information from **Evaluation of the Effectiveness of the System** could be a basis for reviewing the management system for industrial chemicals. The compliance of industry with reporting obligations needs to be controlled through **Compliance Monitoring** and enforced through **Enforcement**. One could consider requesting fees (**Fees and Charges**) by industry for reporting. Reporting requirements can also be implemented through **Notification/Registration of Chemicals**, **Authorization of Production/Use** and **Licensing of Suppliers** when such elements are selected.

1.1 Information/Data Collection

Description: Collection of information about chemicals production and use, import and export of chemicals as well as other information and data relevant for consumer, worker and environmental safety. It includes collection of selected available information and data from industry and their associations, government authorities (compliance monitoring, evaluation of the effectiveness of the system), international and regional organisations, academia, scientific and other literature, NGOs, media, projects and studies.

Relation to other sub elements: The information and data need to be stored in a way that they are easily accessible for further use in **Hazard Assessment**, **Risk Assessment** and **Risk Management** while ensuring that confidential business information is protected from unauthorized disclosure.

1.2 Information/Data Storage

Description: The Information/Data collected by government need to be stored for later use. Only up-to-date and quality controlled data should generally be stored, although some historical data on production or import volumes or uses may be useful for time trend analyses. If the information/data contain confidential business information then the

confidentiality should be guaranteed. Information and data could be stored in a National Database.

Relation to other sub elements: Information/Data Storage facilitates Information/Data Dissemination.

1.3 Information/Data Dissemination

Description: Information/Data Dissemination means that the data collected and stored should be made available to all stakeholders to enable them to fully participate in the management system. Confidential business information will be accessible only by authorized persons. Government officials should have access to all stored information necessary for their work. The public will receive non – confidential information relevant for health and environmental safety.

Relation to other sub elements: Effective and appropriate access to the information received and being considered by the government is essential to adequately inform stakeholders and build confidence in the chemical management scheme.

2 Hazard Assessment⁴

Description: Hazard Assessment contains two sub elements – Hazard Identification and Hazard Characterization - and is a process to determine the possible adverse effects of a chemical to which an organism, system, or (sub) population could be exposed. Hazard is the inherent property of a chemical that has the potential to cause adverse effects when an organism, system, or (sub) population is exposed to that chemical. Hazard assessment can be done at varying levels, ranging from an initial or “screening” assessment to a comprehensive/detailed assessment.

Relation to other elements: Hazard assessment may lead to classification and labeling of chemicals which can be used as a means to communicate hazards along the supply chain from producer to the user. Hence Hazard Assessment is an important input into any **Risk Management** activities to improve environment safety (air, water, soil), public and workers safety, Pollution Release and Transfer Registers, accident prevention, storage, transport and waste management including recycling and waste disposal. Hazard Identification is the basis for Hazard Assessment and together with Hazard Characterization is an important input into **Risk Assessment**. Industry could be requested to classify and label hazardous chemicals according to the GHS and this obligation needs to be controlled and enforced. Information on hazard identification and characterization of (priority) chemicals could be stored in a National Database.

2.1 Hazard Identification

Description: Hazard Identification is the identification of the type and nature of adverse effects that a chemical has an inherent capacity to cause to humans or environmental organisms. It should be implemented through the classification according to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Relation to the other sub element: Hazard Identification is the first step of Hazard Assessment and the basis for hazard characterization.

2.2 Hazard Characterization

Description: Hazard Characterization is the qualitative and, wherever possible, quantitative description of the inherent property of a chemical that has the potential to

⁴ Hazard and risk assessment, risk management descriptions are adapted from IPCS RISK ASSESSMENT TERMINOLOGY, WHO, 2004 <http://www.inchem.org/documents/harmproj/harmproj/harmproj1.pdf>

cause adverse effects. This should, where possible, include a dose response assessment and its uncertainties.

Relation to the other sub element: Hazard Characterization is the second step of Hazard Assessment.

3 Risk Assessment

Description: Risk Assessment contains four sub elements - Hazard Assessment including Hazard Identification and Hazard Characterization, Exposure Assessment and Risk Characterization - and is a process intended to calculate or estimate the risk to a given target organism, system, or (sub) population, including the identification of uncertainties, following exposure to a chemical, taking into account the inherent characteristics of the chemical of concern as well as the characteristics of the specific target system. Risk assessment can be done for the whole lifecycle of a chemical, for one or more stage of the lifecycle, for a concrete situation like environmental releases (either generally or for a given site). Risk assessment can be done at an initial (or “screening”) level or at a more detailed/comprehensive level. As detailed/comprehensive risk assessment can be very resource intensive it could be considered to rely on risk assessments carried out in another country or region, if exposure conditions are similar or considered to be covered, or to do such risk assessments only for high priority/selected chemicals.

Relation to other elements: Risk Assessment can be used to inform priority setting decisions or to provide an understanding of the need and the basis for **Risk Management** decisions. The information on risk assessments of (priority) chemicals could be stored in a National Database.

The sub elements Hazard Identification and Hazard Characterization are described under **Hazard Assessment**. Exposure Assessment is the estimation or measurement of exposure to the chemical under investigation during its life cycle and is with hazard assessment the basis for risk characterization. The exposure assessment for the lifecycle of a chemical is the main activity in risk assessment and needs input from all sectors involved in industrial chemicals management. Risk Characterization is the qualitative and, wherever possible, quantitative determination, including uncertainties, of the probability of occurrence of known and potential adverse effects of chemical in a given organism, system, or (sub)population under defined exposure conditions.

4 Risk Management

Description: Risk Management contains three sub elements – Risk Evaluation, Socio-Economic Analysis and Risk Communication, Exposure Control and Risk Monitoring - and is a decision-making process involving consideration of relevant risk assessment information relating to the hazards and exposures from a chemical and the socio-economic aspects (political, social, economic, and technical factors) so as to develop, analyze and compare regulatory and non-regulatory control options and to select and implement the appropriate regulatory response to that substance. Precaution can be applied in risk management when there are threats of serious or irreversible damage to man or the environment. In this situation the lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent the damage.

Risk management measures include, for example, labeling of chemicals and mixtures according to the GHS, use of safety data sheets, use of personal protective equipment or bans and restrictions for marketing and use. Other options to anticipate and prevent risks are for example pollution prevention, to reduce the generation of hazardous waste, environmentally sound recovery and recycling, safer alternatives, informed substitution, cleaner production, chemical leasing. If another country has already assessed or acted upon a chemical, information is likely to be available on risk reduction measures that

have been adopted, as well as the background for these measures. This information can be useful for a country starting to assess a chemical.

Risk management measures can be applied to:

- chemicals with unknown properties, e.g. by implementing general exposure minimization measures;
- priority chemicals, e.g. by implementing risk reduction measures depending on the hazard profile and the intended uses;
- high priority chemicals, e.g. through bans or restriction for marketing and use.

Relation to other elements: The information on risk management measures of (priority) chemicals could be stored in a National Database. Risk Management provides target levels for Exposure Control as information to **Evaluation of the Effectiveness of the System** and **Compliance Monitoring**. Other elements **Poison Centers**, **Authorization of Production/Use**, **Licensing of Suppliers** and **Import Permits** provide measures for risk management.

4.1 Risk Evaluation, Socio-Economic Analysis and Risk Communication

Description: Risk Evaluation and Socio-Economic Analysis involves the establishment of a qualitative or quantitative relationship between risks of exposure to a chemical and the socio-economic benefits (for example, economic or performance) of a chemical, involving the complex process of determining the significance of the identified hazards, exposures, and estimated risks to the system concerned or affected by the exposure, as well as the significance of the benefits brought about by the chemical.

Risk Communication is the exchange of information about (health or environmental) risks among risk assessors, managers, news media, interested groups, and the general public and can be included in Risk Management.

4.2 Exposure Control:

Description: Exposure control are the technical, organisational or legal risk management measures that are expected to decrease the exposure of a chemical to an acceptable level determined in the Risk Evaluation and Socio-Economic Analysis.

4.3 Risk Monitoring:

Description: Risk Monitoring is the process of following up the decisions and actions within risk management in order to ascertain that risk containment or reduction with respect to a particular hazard is occurring.

Relation of the sub elements: The content of the Risk Evaluation determines the Exposure Control to manage the identified risks and the effect of the exposure control is evaluated through comparing the results of monitoring the risks with the level of exposure achieved through exposure control.

5 Poison Centers⁵

Description: A poison center is a specialized unit that advises on, and assists with, the prevention, diagnosis and management of poisoning. It answers enquiries about exposure to chemical agents, including products, pharmaceuticals, natural toxins, pesticides and industrial chemicals. It provides an assessment of whether a particular exposure is hazardous, and information on the need for treatment and the kind of treatment that should be given. In poison centers data on toxic exposures to chemicals

⁵ Poison centers adapted from WHO website <http://www.who.int/ipcs/poisons/centre/en/>

and on chemical incidents can be collected. One could consider having a legal obligation for medical doctors to report cases of poisonings on a template to the poison centers.

Relation to other elements: A poison centre could contribute to the risk management for health. The information on incidents can be used as a contribution to the **Evaluation of Effectiveness of the System** for health and could be stored in a National Database. If for example a wrongly labeled chemical by a known company was used and that use has lead to a poisoning this could be the basis for improving the compliance by the company.

Key elements relevant for the functioning of the system

7 Awareness Raising⁶

Description: Awareness Raising contains two sub elements – Public Awareness Raising and Raising Awareness of Decision Makers. Raising awareness about the problems – hazards, risks - with industrial chemicals in the country, about the gaps and overlaps in the existing sector management systems and how a framework can address the problems and gaps and overlaps, what resources are required and what benefits can be expected from effective risk management measures is essential to get public and political support for the development and implementation of a framework. It is important to communicate adequate understandable information at an appropriate level of detail to the targeted audience. Coordination of the communications from different groups (industry, NGOs, public authorities) should be sought as far as possible in order to avoid that the target group is faced with contradictory information.

Relation to other elements: The information for Awareness Raising can come from the result of analysis of gaps and overlaps in the existing management system (e.g., as developed in a National Profile) and from the element **Information/Data** including selected available information and data relevant for health and safety of man or environment collected from industry associations, government authorities (**Compliance Monitoring, Evaluation of the Effectiveness of the System**), international and regional organisations, academia, the scientific and other literature, public NGOs, media, projects and studies. The awareness of the public and decision makers about problems with industrial chemicals provided through **Information/Data** collected by the management system and about the benefits from managing them safely could increase the political support by decision makers **Ensuring Adequate Resources** for the implementation of the management system. Awareness Raising of industry and information on the aim of the framework and of their responsibilities and obligations under the legislation could facilitate that companies comply with the obligations. Companies are more likely to comply if they understand the obligations and their rationale. **Education/Training of the Public and Workers** could complement and strengthen the Awareness Raising activities. The system for classification and labelling (GHS) remain a key instrument in that regard.

7.1 Public Awareness Raising

Description: Public Awareness Raising can be done through information workshops for the public, public awareness campaigns through the media, NGOs, making information publicly available, organizing site visits of industries, laboratories and other events and organizing information sessions in schools. Tools for information could be websites, guidelines and other types of information material like brochures, leaflets or presentations.

⁶Awareness, fees and charges, compliance monitoring, enforcement, licensing descriptions are adapted from Guidance on the Development of Legal and Institutional Infrastructures for Sound Management of Chemicals and Measures for Recovering Costs of National Administration (LIRA-Guidance), Test version, UNEP Chemicals 2012
<http://www.unep.org/hazardoussubstances/UNEPsWork/Mainstreaming/UNEPLIRAGuidance/tabid/79269/Default.aspx>

Relation to other sub element: It complements the other sub element.

7.2 Raising Awareness of Decision Makers

Description: Raising Awareness of Decision Makers includes raising awareness of the regulated industry as the same type of tools can be used. It can be done through involving industry in the policy making process, information workshops, decision makers and industry, public awareness campaigns through the media, NGOs, organizing site visits of industries, laboratories. Tools for information could be websites, guidelines and other types of information material like brochures, leaflets or presentations.

Relation to other sub element: It complements the other sub element.

8 Ensuring Adequate Resources

Description: Ensuring Adequate Resources for the implementation of the system contains two sub elements – Government Resources for the legal and administrative infrastructure of the framework and Fees and Charges which are paid by industry. Resources are an overarching issue as they need to ensure the functioning of all elements that are included in the framework for the management of industrial chemicals. Long term funding will be facilitated by defining the role of the industry and of the administration in the legislation.

Relation to other elements: The amount of resources available for the framework depends on the economic situation of the country and the importance of industrial chemicals for the economy. Most countries are not producers but importers of chemicals. Still, all countries use industrial and consumer chemicals to a significant extent. To safeguard economic and social development a management system is therefore of importance to all countries. However, the availability of resources will determine the nature and extent of the management system for industrial chemicals which is to be developed and implemented by a country. The awareness of the public and decision makers about problems with industrial chemicals provided through **Information/Data** collected by the management system and about the benefits from managing them safely could increase the will to provide sufficient resources by decision makers.

8.1 Government Resources

Description: Resources which are made available to government agencies, departments, or ministries can be used to support staffing and provide needed equipment and training required by the government to develop and implement a management system for industrial and consumer chemicals.

Relation to other sub element: Some of the resources by government could be financed by Fees and Charges collected from industry.

8.2 Fees and Charges:

Description: Fees can be requested from industry for services by the government that complement industry obligations like controlling the quality of submitted information or reviewing assessments with a feedback to industry. Fees could be requested, for example, for enforcement, reporting, notification/registration, licensing, authorization and import permit.

Relation to other sub element: Fees and Charges from industry can be a source of resources for an effective chemicals management system, including enforcement.

9 Compliance Monitoring

Description: Compliance Monitoring contains two sub elements - Customs Control and Local Control - and includes steps to ensure that requirements and obligations are being met by industry.

Relation to other elements: Compliance Monitoring complements and supports **Enforcement** and, as such, effective inspection systems and reporting requirements are needed to ensure that the regulated companies fulfill their responsibilities and are the bases for sanctions by the authorities for Compliance Monitoring. The **Risk Management** measures that need to be enforced (for example bans and restrictions for marketing and use) will be communicated to customs and the local inspectorates. Relevant information could be found in the information stored for **Information/Data**, for example, in a National Database. **Awareness Raising** of industry and information on the aim of the framework and of their responsibilities and obligations under the legislation could facilitate that companies comply with the obligations. Companies are more likely to comply if they understand and agree with the requirements. The information on Compliance Monitoring can be stored in a National Database while respecting confidentiality of certain company specific information. **Training of Customs Officials and Inspectors** on the obligation of industry for industrial chemicals, how to identify them as such, in mixtures or in articles and on the possible sanctions is important for an effective Compliance Monitoring.

9.1 Customs Control

Description: Customs Control means Compliance Monitoring of obligations of industry from the management system for industrial chemicals by customs officials. This activity is part of the Customs Control of imported goods.

Relation to other element or sub element: It complements the sub element Local Control by enforcement at the border to prevent illegal imports of substances. Relying on only customs control is not considered sufficient because it excludes the control of domestic manufacturers. The customs could be supported by a relevant Ministry that issues **Import Permits** on request from the importer implementing obligations from the management system for industrial chemicals. The Ministry could consider having an agreement with customs that specifies their respective roles and tasks.

9.2 Local Control

Description: Local Control means compliance monitoring of obligations of industry from the management system for industrial chemicals by local or national inspectorates.

Relation to the other sub element: Inspections within the country complements the Customs Control. Companies could be controlled by different inspectorates under different Ministries for the framework obligations or sector specific management of chemicals. One could consider either to promote a good coordination between the different inspectorates or to centralize some control functions in one inspectorate.

10 Enforcement of obligations

Description: Enforcement of obligations contains two sub elements – Sanctions and Liability. Enforcement of obligations of companies can only be effective if one has a clear and consequent regime.

Relation to other elements: Enforcement complements and strengthens **Compliance Monitoring** and an effective inspection systems and reporting requirements are needed to ensure that the regulated companies fulfill their responsibilities. **Evaluation of the Effectiveness of the System** through health and environment monitoring can also be

used as an input to identify possible enforcement priorities. The possibility of applying Sanctions depends on the clarity of the requirements contained in the law.

10.1 Sanctions

Description: Sanctions are generally defined by a list of administrative or criminal offenses – non-compliance with the legal requirements- by companies or government authorities. Sanctions could include monetary sanctions, imposing actions like limitations to or ending of the activities of the company or for serious offences incarceration. Administrative sanctions are based on a decision of a competent authority for Compliance Monitoring. Appeals to this decision should be possible. Sanctions through the legal system are normally based on findings of control authorities.

Relation to other sub element: Complements the Enforcement through Liability.

10.2 Liability

Description: Enforcement can also include liability measures. If a causal relationship between an activity of a consumer or worker with a chemical and the damages through poisoning can be demonstrated this can be the basis for a liability for compensating the damage. If a causal relationship between an activity of a company with a chemical and the damages to an area or to an ecosystem through environmental pollution can be demonstrated this can be the basis for the liability for a rehabilitation of the contaminated area or for restoring the ecosystem. Chemical safety would therefore need to be part of a product liability legislation.

Relation to other sub element: Complements the Enforcement through Sanctions.

11 Evaluation of the Effectiveness of the System

Description: Evaluation of the positive impact of the management system contains two sub elements - Evaluation of the Effectiveness of the System (human) Health and Evaluation of the Effectiveness of the System (for protecting the) Environment. It can be implemented through health monitoring by Poison Centers or workplace and environmental monitoring, for example through monitoring programs or by using environmental indicators.

Relation to other elements: The information from **Poison Centers** or poisoning reporting from industry and hospitals can be used for evaluating the effectiveness of the system for improving human health. Information from biological monitoring of workers or in projects of certain consumer groups can be used for evaluating the effectiveness of the system for protecting human health while environmental monitoring can be used for evaluating the effectiveness of the system for protecting the environment.

11.1 Evaluation of the Effectiveness of the System - Health

Description: Evaluation of the Effectiveness of the System - Health can be implemented as health monitoring like monitoring poisonings of the consumer or worker through reporting by industry, hospitals and/or through reporting by poison centers. Also biological monitoring of workers or of certain consumer groups can be used for evaluation of the effectiveness of the system.

Relation to other sub element: Complements the other sub element.

11.2 Evaluation of the Effectiveness of the System - Environment

Description: Evaluation of the Effectiveness of the System - Environment can be implemented through environmental monitoring in the media air, water and soil. .

Relation to other sub element: Complements the other sub element.

Template for an information sheet on a country's industrial chemicals management system

Country	XXX
Does your country have legislation in place that define responsibilities and address risk reduction and prevention or minimisation of impacts of industrial and consumer chemicals [and include relevant enforcement and compliance]?	Yes / No / In development
Reference of the legislation	XXXX
Year of adoption or last revision	XXXX
Approximate number of industrial chemicals assessed per year (including via the use of risk assessments from other countries)	XX
Protection goals covered by the legislation	Workers/Consumers/Environment
Public availability of risk assessments	Yes / No / NA
URL	XXXX
Recent example of a chemical for which the use of a risk assessment led to risk reduction measures	XXXX
Reference of Risk Assessment	XXXX
Reference of Risk Reduction Measure	XXXX
Other information	XXXX

Examples:

Country	United States
Does your country have legislation in place that define responsibilities and address risk reduction and prevention or minimisation of impacts of industrial and consumer chemicals [and include relevant enforcement and compliance]?	Yes
Reference of the legislation	The Toxic Substances Control Act; https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/frank-r-lautenberg-chemical-safety-21st-century-act
Year of adoption or last revision	2016
Approximate number of industrial chemicals assessed per year	20 existing chemicals; 500-1000 new chemicals
Protection goals covered by the legislation	Workers/Consumers/Environment
Public availability of risk assessments	Yes
URL	Existing chemicals: https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-evaluations-existing-chemicals-under-tsca New chemicals: summaries of risk determinations: https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/status-pre-manufacture-notices
Recent example of a chemical for which the use of a risk assessment led to risk reduction measures	Benzidine dyes;
Reference of Risk Assessment	https://www.epa.gov/sites/production/files/2015-09/documents/dcb_action_plan_06232010.noheader.pdf
Reference of Risk Reduction Measure	https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-benzidine-dyes#action
Other information	NA

Country	Colombia
Does your country have legislation in place that define responsibilities and address risk reduction and prevention or minimisation of impacts of industrial and consumer chemicals [and include relevant enforcement and compliance]?	In development
Reference of the legislation	As part of the planned actions, in 2017 Colombia adopted the OECD GLP principles (Resolution 2507/2017) and in 2018 the GHS (Decree 1496/2018). Also in 2018 Colombia notified its draft decree on industrial chemicals management to WTO.
Year of adoption or last revision	Industrial chemicals programme is predicted to be adopted by 2020
Approximate number of industrial chemicals assessed per year	NA
Protection goals covered by the legislation	Workers/Consumers/Environment
Public availability of risk assessments	NA
URL	NA
Recent example of a chemical for which the use of a risk assessment led to risk reduction measures	NA
Reference of Risk Assessment	NA
Reference of Risk Reduction Measure	NA
Other information	Colombia adopted in October 2016 its National Chemicals Policy . This policy document addresses, <i>inter alia</i> , the development of Colombia's industrial chemicals programme with actions described until the end of 2020.



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**Strategic Approach
to International
Chemicals Management**

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

**Global Chemicals Outlook II Synthesis Report: From Legacies to
Innovative Solutions –**

Implementing the 2030 Agenda for Sustainable Development

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the synthesis report of the Global Chemicals Outlook II, received from the United Nations Environment Programme. The report is presented in the annex as received from the United Nations Environment Programme and has not been edited by the secretariat.

* SAICM/OEWG.3/1.



GLOBAL CHEMICALS OUTLOOK II

FROM LEGACIES TO
INNOVATIVE SOLUTIONS

SYNTHESIS REPORT (2019)

IMPLEMENTING THE 2030 AGENDA
FOR SUSTAINABLE DEVELOPMENT



Global Chemicals Outlook II

From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development – Synthesis Report

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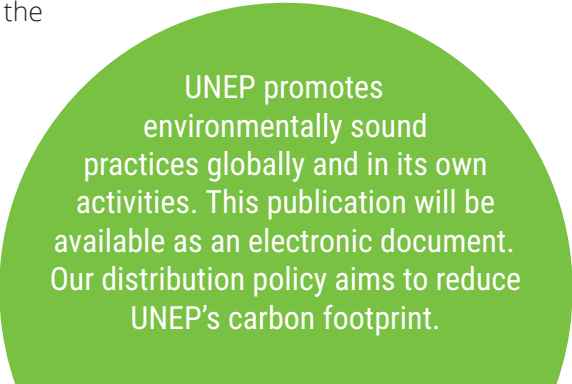
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Feedback and contact

The United Nations Environment Programme encourages interested readers of this report to engage and become part of the Global Chemicals Outlook II community. We are keen to hear your views about the report and how it makes a difference on the ground.

Please contact: science.chemicals@un.org

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About the Global Chemicals Outlook II

The first edition of the *Global Chemicals Outlook*, published in February 2013, assembled scientific, technical and socio-economic information on the sound management of chemicals. It covered trends and indicators for chemical production, transport, use and disposal, and associated health and environmental impacts; economic implications of these trends, including costs of inaction and benefits of action; and instruments and approaches for sound management of chemicals.

Decision 27/12, adopted by the Governing Council of the United Nations Environment Programme in 2013, recognized the significance of the findings of the first *Global Chemicals Outlook*, which highlighted the significant increase in the manufacture and use of

chemicals globally, their importance to national and global economies and the costs and negative effects on human health and the environment of unsound chemicals management, and made recommendations for future action. Decision 27/12 also requested the Executive Director to continue work on the *Global Chemicals Outlook*, particularly in areas where data were found to be lacking or inadequate, and to enhance transparency through regionally balanced stakeholder involvement, inter alia, with a view to developing in the future a tool for assessing progress towards the achievement of the sound management of chemicals and hazardous wastes, including the existing 2020 goal, taking into account and building upon other existing sources of information.

Resolution 2/7, adopted by the United Nations Environment Assembly in 2016, requested the Executive Director to submit an update of the first *Global Chemicals Outlook*, addressing, inter alia, the work carried out particularly in relation to lacking or inadequate data to assess progress towards the 2020 goal, the development of non-chemical alternatives, and the linkages between chemicals and waste, in coordination with the Global Waste Management Outlook, and providing scientific input and options for implementation of actions to reach relevant Sustainable Development Goals and targets up to and beyond 2020. Resolution 2/7 also requested the Executive Director to ensure that the updated *Global Chemicals Outlook* addresses the issues which have been identified as emerging policy issues by the International Conference on Chemicals Management (the governing body of the Strategic Approach to International Chemicals Management) as well as other issues where emerging evidence indicates a risk to human health and the environment.



The second edition of the *Global Chemicals Outlook* has been prepared with substantive contributions from more than 400 experts and under the guidance of a Steering Committee, which provided oversight, strategic directions and guidance on all aspects of the report's development, as well as technical inputs, where applicable. The Steering Committee was composed of representatives from Governments, non-governmental organizations (including civil society, industry/the private sector, and academia) and inter-governmental organizations, with participation from all regions and a wide range of stakeholders.

This *Synthesis Report* of the *Global Chemicals Outlook II* summarizes key findings and insights of the full *Global Chemicals Outlook II* and follows the same five-part structure as the full report. A shorter *Summary for Policymakers* was tabled as a working document of the fourth session of the United Nations Environment Assembly and is available in all six UN languages. The full *Global Chemicals Outlook II* is launched in April 2019 at the third meeting of the Open-Ended Working Group of the International Conference on Chemicals Management.

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Foreword



Chemicals are part of our everyday lives. From pharmaceuticals to plant protection, innovations in chemistry can improve our health, food security and much more. However, if poorly used and managed, hazardous chemicals and waste threaten human health and the environment.

As the second *Global Chemicals Outlook* lays out, global trends such as population dynamics, urbanization and economic growth are rapidly increasing chemical use, particularly in emerging economies. In 2017, the industry was worth more than US\$5 trillion. By 2030, this will double. Whether this growth becomes a net positive or a net negative for humanity depends on how we manage the chemicals challenge. What is clear is that we must do much more.

Large quantities of hazardous chemicals and pollutants continue to leak into the environment, contaminating food chains and accumulating in our bodies, where they do serious damage. Estimates by the European Environment Agency suggest that 62 per cent of the volume of chemicals consumed in Europe in 2016 were hazardous to health. The World Health Organization estimates the burden of disease from selected chemicals at 1.6 million lives in 2016. The lives of many more are negatively impacted.

We have made some progress in managing chemicals through national and stakeholder action, international treaties and voluntary instruments. At the World Summit on Sustainable Development in 2002, countries committed to minimizing the adverse effects of chemicals

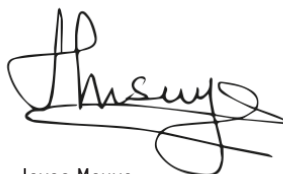
by 2020. At our current pace, we will not achieve this goal. Considering the expansion of the market, and the associated increase in contamination, we cannot continue to gamble with our health.

Solutions do exist, as the report shows. Sustainable supply chain management, innovations in green and sustainable chemistry, and adopting common approaches to chemicals management can reduce the risks to human health, ecosystems and economies.

But a solution is only as good as the will to implement it. Now, more than ever, key influencers such as investors, producers, retailers, citizens, academics and ministers must act. We have the chance to do what needs to be done. We are implementing the 2030 Agenda for

Sustainable Development and developing a future framework for the sound management of chemicals and waste beyond 2020.

We cannot live without chemicals. Nor can we live with the consequences of their bad management. My hope is that this Outlook inspires us all to increase our efforts to safely capture the benefits of chemistry for all humanity.

A handwritten signature in black ink, appearing to read 'J. Msuya', with a stylized flourish at the end.

Joyce Msuya
Acting Executive Director
UN Environment

Key findings

The global goal to minimize adverse impacts of chemicals and waste will not be achieved by 2020. Solutions exist, but more ambitious worldwide action by all stakeholders is urgently required.



1. The size of the global chemical industry exceeded United States dollars 5 trillion in 2017. It is projected to double by 2030. Consumption and production are rapidly increasing in emerging economies. Global supply chains, and the trade of chemicals and products, are becoming increasingly complex.



2. Driven by global megatrends, growth in chemical-intensive industry sectors (e.g. construction, agriculture, electronics) creates risks, but also opportunities to advance sustainable consumption, production and product innovation.



3. Hazardous chemicals and other pollutants (e.g. plastic waste and pharmaceutical pollutants) continue to be released in large quantities. They are ubiquitous in humans and the environment and are accumulating in material stocks and products, highlighting the need to avoid future legacies through sustainable materials management and circular business models.



4. The benefits of action to minimize adverse impacts have been estimated in the high tens of billions of United States dollars annually. The World Health Organization estimated the burden of disease from selected chemicals at 1.6 million lives in 2016 (this is likely to be an underestimate). Chemical pollution also threatens a range of ecosystem services.



5. International treaties and voluntary instruments have reduced the risks of some chemicals and wastes, but progress has been uneven and implementation gaps remain. As of 2018, more than 120 countries had not implemented the Globally Harmonized System of Classification and Labelling of Chemicals.



6. Addressing legislation and capacity gaps in developing countries and emerging economies remains a priority. Also, resources have not matched needs. There are opportunities for new and innovative financing (e.g. through cost recovery and engagement of the financial sector).



7. Significant resources can be saved by sharing knowledge on chemical management instruments more widely, and by enhancing mutual acceptance of approaches in areas ranging from chemical hazard assessment to alternatives assessment.



8. Frontrunner companies – from chemical producers to retailers – are introducing sustainable supply chain management, full material disclosure, risk reduction beyond compliance, and human rights-based policies. However, widespread implementation of these initiatives has not yet been achieved.



9. Consumer demand, as well as green and sustainable chemistry education and innovation (e.g. through start-ups), are among the important drivers of change. They can be scaled up through enabling policies, reaping the potential benefits of chemistry innovations for sustainable development.



10. Global knowledge gaps can be filled. This can be achieved, for example, by taking steps to harmonize research protocols, considering health or environmental impact information and harm caused to set and address priorities (e.g. emerging issues), and strengthening the science-policy interface through enhanced collaboration of scientists and decision-makers.

List of acronyms

CLP	Classification, labelling and packaging	PCBs	Polychlorinated biphenyls
DDT	Dichlorodiphenyltrichloroethane	PFASs	Per- and polyfluoroalkyl substances
DEHP	Bis(2-ethylhexyl) phthalate	POPs	Persistent organic pollutants
EDCs	Endocrine-disrupting chemicals	PRTRs	Pollutant Release and Transfer Registers
EPIs	Emerging policy issues	REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
EU	European Union	SAICM	Strategic Approach to International Chemicals Management
FAO	Food and Agriculture Organization of United Nations	SDGs	Sustainable Development Goals
GCO	Global Chemicals Outlook	SMEs	Small and medium-sized enterprises
GHS	Globally Harmonized System of Classification and Labelling of Chemicals	SVHC	Substances of Very High Concern
HHPs	Highly hazardous pesticides	UNEA	United Nations Environment Assembly
ICCM	International Conference on Chemicals Management	UNITAR	United Nations Institute for Training and Research
ILO	International Labour Organization	US	United States
IOMC	Inter-Organization Programme for the Sound Management of Chemicals	VOCs	Volatile organic compounds
IPM	Integrated pest management	WHO	World Health Organization
LCA	Life cycle assessment	WSSD	World Summit on Sustainable Development
OECD	Organisation for Economic Co-operation and Development	ZDHC	Zero Discharge of Hazardous Chemicals

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**Introduction: chemicals and waste
in the broader sustainable
development context**

The *Global Chemicals Outlook II* (GCO-II) is released at a crucial moment. Since the publication of the GCO-I in 2013, the global consumption and production of chemicals¹ has continued to grow, with a number of trends that are a cause for concern about human health and the environment. This period also witnessed the adoption in 2015 of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), which include several targets specifically related to chemicals and waste management. Shortly thereafter, the International Conference on Chemicals Management (ICCM), the governing body

of the Strategic Approach to International Chemicals Management (SAICM), initiated an intersessional process to prepare by 2020 recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020.

By using a back-casting approach which envisaged a sustainable future, GCO-II has identified a range of actions for consideration by policy-makers around the world and informing chemicals and waste management beyond 2020.

Table 1 Chemicals and waste in the 2030 Agenda for Sustainable Development: SDG Targets 3.9 and 12.4

SDG 3: Ensure healthy lives and promote well-being for all at all ages



Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

SDG 12: Ensure sustainable consumption and production patterns



Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

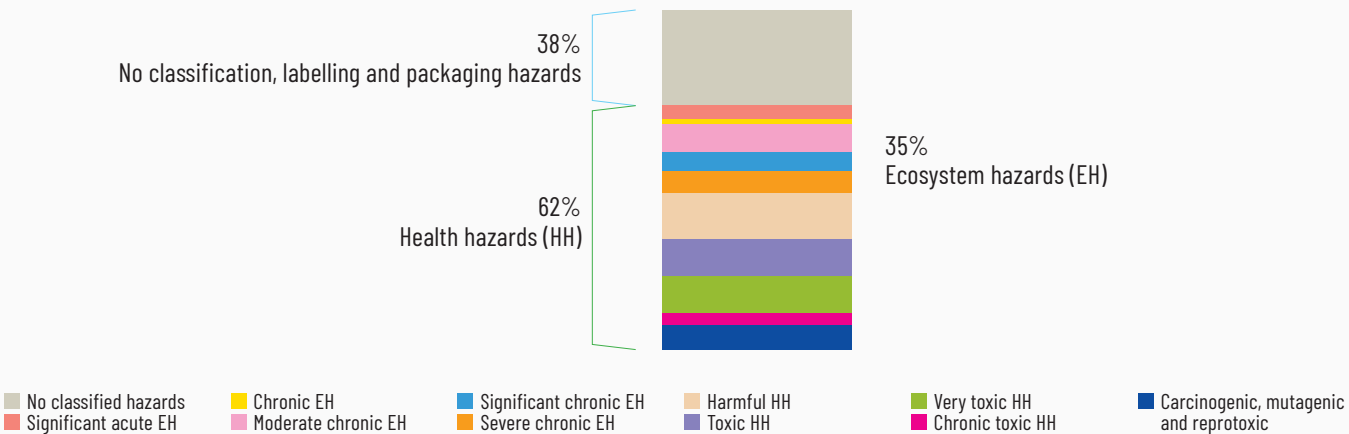
1 The term “chemicals” is understood throughout this report to include pharmaceuticals, unless otherwise noted.

Sound management and innovations in chemistry are essential for sustainable development

From pharmaceuticals and plant protection products to the production of cars, computers and textiles, many manufactured chemicals have helped improve human health, food security, productivity and quality of life throughout the world. While the number of chemicals registered by the American Chemical Society's global Chemical Abstracts Service exceeds 142 million, only a fraction of these chemicals are placed on the market.

A 2018 draft report jointly developed by the United Nations Environment Programme and the International Council of Chemical Associations estimated the total number of industrial chemicals in commerce globally at 40,000 to 60,000, with 6000 of these chemicals accounting for more than 99 per cent of the total volume. The number of chemicals on the market is exceeded by a larger – and growing – number of chemical-intensive products such as computers, mobile phones, furniture and personal care products. [Relevant sections in the GCO-II: Introduction; Part I, Ch. 1]

Figure 1 Share of the volume of chemicals consumed in the European Union in 2016 by hazard categories (based on European Environment Agency 2018)



According to data from Eurostat, the statistical office of the European Union (EU), compiled in 2018 by the European Environment Agency, approximately 62 per cent of the 345 million tonnes of chemicals consumed in the EU in 2016 were hazardous to health. In presenting the data, the Agency noted that volumes of hazardous chemicals consumed are not a proxy for the risks posed by those chemicals. [Introduction]

Many chemicals, products and wastes have hazardous properties and continue to cause significant adverse impacts on human health and the environment because they are not properly managed. Chemicals or groups of chemicals that are receiving attention in research and policy-making because of their hazardous properties and potential risks include, but are not limited to, carcinogens, mutagens and chemicals hazardous to reproduction, persistent bio-accumulative and toxic substances, endocrine-disrupting chemicals, and chemicals with neurodevelopmental effects. [Introduction; Part I, Ch. 1, 7; Part III, Ch. 1]

Ensuring the sound management of chemicals and waste, as called for internationally at the highest political level during several major United Nations Conferences, is essential for advancing sustainable development across its social, economic and environmental dimensions. Chemistry and the chemical industry have important roles to play in achieving the sound management of chemicals and waste within a sustainable development context. Addressing legacies, coupled with innovations in chemistry and materials science, have the potential to create safer chemicals, increase resource efficiency, and reduce the health and environmental impacts associated with the current global production and consumption system. [Introduction; Part II, Ch. 3; Part IV, Ch. 1]

Milestones in international chemicals and waste management

For several decades, the international community has recognized the need for action to advance the sound management of chemicals and waste. In 1992, at the Rio Summit, Heads of State and Government adopted Agenda 21, which includes chapters on chemicals and hazardous wastes. Also adopted in 1992, the Rio Declaration features a number of principles and approaches relevant to the sound management of chemicals and waste, including the polluter pays principle, the right-to-know, and the precautionary approach. Ten years later, the World Summit on Sustainable Development (WSSD) adopted the Johannesburg Plan of Implementation, in which Governments agreed to “achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment [...]”. The 2020 timeline was reiterated at the Rio plus 20 Summit in 2012 (referring to chemicals and hazardous waste), as well as in the 2030 Sustainable Development Agenda through SDG Target 12.4 (referring to chemicals and all wastes). SDG Target 3.9, which focuses on reducing deaths and illnesses, features a 2030 timeline. [Introduction; Part II, Ch. 1]

Multilateral treaties and voluntary agreements

Since around the time of the Rio Summit and in the following decades, the international community has taken concerted action through multilateral treaties on some of the most harmful chemicals and on some

issues of global concern. Prominent examples include the following:

- › Montreal Protocol on Substances that Deplete the Ozone Layer (entry into force in 1989)
- › Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (entry into force in 1992)
- › International Labour Organization (ILO) Conventions: C170 – Chemicals Convention (entry into force in 1993) and C174 – Prevention of Major Industrial Accidents Convention (entry into force in 1997)
- › Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (entry into force in 2004)
- › Stockholm Convention on Persistent Organic Pollutants (POPs) (entry into force in 2004)

- › World Health Organization (WHO) International Health Regulations (IHR) (2005) (entry into force in 2007)
- › Minamata Convention on Mercury (entry into force in 2017)

Moreover, several voluntary international instruments adopted by the governing bodies of international organizations address a range of chemicals and issues. Prominent examples include the International Code of Conduct on Pesticide Management (hereinafter referred to as “Code of Conduct”), originally developed in 1985 with a fourth version adopted in 2013, and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) adopted in 1992. The GHS was specifically mentioned in the 2002 Johannesburg Plan of Implementation, with a view to the system being fully operational by 2008. [Introduction; Part II, Ch. 1]



BASEL CONVENTION



ROTTERDAM CONVENTION



STOCKHOLM CONVENTION



International
Labour
Organization



Adoption of the Strategic Approach to International Chemicals Management in 2006



In 2006, following the call made at the WSSD, the Strategic Approach to International Chemicals

Management (SAICM) was adopted by the first session of the ICCM (ICCM1) as a multi- and cross-sectoral and participatory strategic approach. SAICM's overall objective is "to achieve the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health". SAICM comprises the Dubai Declaration on International Chemicals Management, which expressed high-level political commitment to SAICM, and an Overarching Policy Strategy.

The Overarching Policy Strategy referenced the WSSD 2020 timeline, referring to the "2020 goal", a term subsequently used in various international fora. Objectives to achieve this goal are grouped under five areas: risk reduction, knowledge and information, governance, capacity-building and technical cooperation, and illegal international traffic. Furthermore, the Dubai Declaration recommends the use and further development of the Global Plan of Action as a working tool and guidance document for meeting the commitments to chemicals management expressed in, among others, the Johannesburg Plan of Implementation. In 2015, ICCM4 endorsed the "overall orientation and guidance for achieving the 2020 goal of sound management of chemicals" (hereinafter referred to as "overall orientation and guidance") as a voluntary

tool that will assist in the prioritization of efforts for the sound management of chemicals and waste as a contribution to the overall implementation of the Strategic Approach. [Introduction; Part II, Ch. 1]

Chemicals and waste in the 2030 Sustainable Development Agenda

The 2030 Agenda for Sustainable Development, including its 17 SDGs (Figure 2) and 169 targets, was adopted by the United Nations General Assembly at a summit of Heads of State in 2015. The SDGs, which are integrated and indivisible, integrate the three dimensions of sustainable development: economic, social and environmental. While Targets 12.4 and 3.9 are of direct relevance for chemicals and waste management, the sound management of chemicals and waste is also relevant for the achievement of many other SDGs. Those include halting biodiversity loss, clean water and sanitation, facilitative access to clean energy, climate action, and ensuring quality education. Furthermore, implementation of other SDGs is essential in achieving the sound management of chemicals and waste, such as those concerned with education, financing and partnerships. [Introduction; Part II, Ch. 1; Part V, Ch. 1]

Chemicals and sustainability: concerns and opportunities

Despite global agreement reached at high-level UN Conferences and significant action already taken, scientists continue to express concerns regarding the lack of progress towards the sound management of chemicals and waste. These include calls for systemic and transformational changes towards safer chemicals

Figure 2 The Sustainable Development Goals

Sound management of chemicals and waste cuts across the Sustainable Development Goals. It is relevant for the achievement of much of the 2030 Agenda for Sustainable Development.

and innovations in chemistry that will contribute to sustainable development. In this context, “green chemistry”, “sustainable chemistry”, “one-world chemistry” and related concepts are challenging chemistry to help meet sustainable development needs. Other stakeholders have raised similar concerns. A number of initiatives in the private sector have also identified opportunities to advance sustainability in relation to chemicals. These initiatives include the World Business Council for Sustainable Development Chemical Sector SDG Roadmap, the Together for Sustainability initiative bringing together 22 companies in the chemical industry, and the Zero Discharge of Hazardous Chemicals

(ZDHC) initiative bringing together frontrunner textile companies. [Introduction; Part IV, Ch. 7; Part V, Ch. 3]

Intersessional process on the Strategic Approach and the sound management of chemicals and waste beyond 2020

In 2015, Governments and other stakeholders participating in ICCM4 noted that “in most countries more progress has to be made towards actually minimizing the significant adverse effects on human health and the environment that may be associated with some chemical production, use and end-of-life disposal”. They

also noted “with urgency the limited time remaining to achieve the 2020 goal”. Shortly after the adoption of the 2030 Agenda in 2015, Governments and other stakeholders participating in ICCM4 initiated a process to prepare recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020. The Conference agreed that the process should be open to all stakeholders and be concluded by ICCM4 in 2020. The period until 2020 thus represents a historic window of opportunity to reflect on lessons learned in international chemicals and waste management. [Introduction]

Opportunities to link international policy agendas

Given the relevance of chemicals and waste across the 2030 Agenda, the beyond 2020 intersessional process provides an opportunity to link and create synergies between chemicals and waste management and other international policy agendas. These synergies include: [Introduction]

- › **Chemicals and health:** The sound management of chemicals and waste plays an important role in avoiding and minimizing risks posed by harmful chemicals to protect human health. While the links between chemicals and health are well-established and the health sector has been an important partner in efforts to minimize risks, further efforts to strengthen linkages, increase awareness of the important roles of the health sector in the management of chemicals, and enhance participation in international chemicals management activities can build on the WHO Chemicals Road Map approved by the 70th World Health Assembly in 2017.
- › **Chemicals and the world of work:** Workers are among those most exposed to hazardous chemicals in various sectors and across global supply chains. Ratification and implementation of international labour standards help achieve decent work that is safe and healthy, while simultaneously advancing towards greener work processes.
- › **Chemicals and climate change:** Linkages range from the remobilization of chemicals due to melting glaciers, to reducing the greenhouse gas emissions of the chemical industry, to the potential of chemistry to develop adaptation and mitigation solutions. The chemical industry and downstream sectors therefore have an important role to play in achieving the objectives of the Paris Agreement.
- › **Chemicals and biodiversity:** The critical role of pollution and chemicals was recognized in the Strategic Plan for Biodiversity 2011-2020, adopted under the Convention on Biological Diversity. Given current activities to develop a biodiversity framework beyond 2020, opportunities exist to create linkages with the chemicals and waste process beyond 2020.
- › **Chemicals, agriculture and food:** Chemicals play a major role with respect to agriculture and food, for example in plant protection and food conservation. This link has long been recognized, and many countries have long-standing legislation to control chemicals used in agriculture and food production. International agreements and bodies that address these and related topics include the Code of Conduct and the Codex Alimentarius, a collection of international food standards.

- › **Chemicals and sustainable consumption and production:** Target 12.4 is embedded in SDG 12, reflecting the insight that chemicals and waste management is inextricably linked to the broader quest for resource efficiency, waste reduction, and the need to decouple economic growth from natural resource use and environmental impacts. Individuals, companies and organizations play a critical role through their consumption choices and directly or indirectly impact chemicals production and sustainability. Opportunities exist to strengthen linkages with the 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns.
- › **Chemicals and the international pollution agenda:** As highlighted at the third session of the United Nations Environment Assembly (UNEA), whose theme was “Towards a Pollution-Free Planet”, chemicals and waste issues are a key dimension of a broader international and integrated approach to pollution. The UNEA 3 Declaration requested the United Nations Environment Programme to prepare an implementation plan on the issue of a pollution-free planet for consideration by UNEA 4 in 2019.

Recognizing the interface of chemicals and waste management

For many years, the chemicals and waste agendas have been addressed separately, both internationally and in many countries. For example, in Agenda 21 chemicals and waste management were covered in

separate chapters. However, it has been increasingly recognized that the design and use of safer chemicals and sustainable production processes is essential for reducing releases throughout the life cycles of chemicals and products, including during the reuse, recycle and disposal stages. These front-of-the-pipe solutions also help ensure that secondary raw materials rechannelled into a circular economy are not contaminated with unwanted hazardous chemicals. In turn, the widely known waste hierarchy (Figure 3) focuses on source reduction, reuse and recycling of materials, while energy recovery, waste treatment and waste disposal are seen as least preferred options. The waste hierarchy



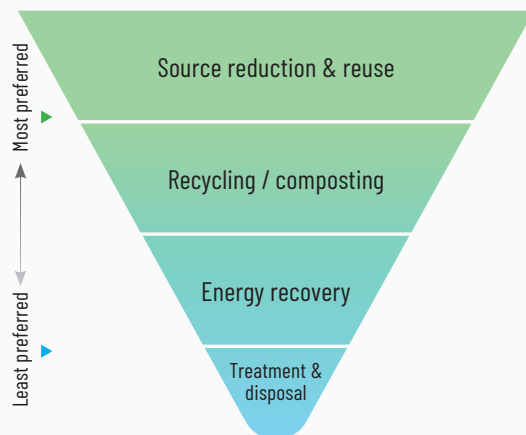
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also emphasizes sustainable material management, resource efficiency and life cycle management. This brief discussion suggests that important aspects of chemicals and waste management are converging, in line with a life cycle management approach. [Introduction; Part I, Ch. 4-5; Part IV, Ch. 1]

At the international level, critical progress towards bringing the chemicals and waste management concepts

together has been made through SDG Target 12.4 under SDG 12 on sustainable consumption and production, and through including waste in the mandate of the intersessional process on the Strategic Approach and the sound management of chemicals and waste beyond 2020. While GCO-II focuses on the sound management of chemicals and front-of-the-pipe-solutions, the interface with waste management is addressed throughout the report. [Introduction]

Figure 3 The waste hierarchy, sustainable materials management and the circular economy (adapted from United States (US) Environmental Protection Agency 2017a)



The waste hierarchy strives to achieve similar objectives as the related concepts of sustainable materials management and the circular economy. They have in common the quest to minimize the use of materials and maximize reuse. The sound management of chemicals and waste and innovations in chemistry play a key role to enable these concepts. [Introduction; Part I, Ch. 4-5; Part IV, Ch. 1]

A photograph of two young children, a girl and a boy, walking through a lush green field of tall grass. They are both wearing denim shirts and dark pants. They are carrying a large, heavy bundle of rice seedlings on a long wooden pole balanced across their shoulders. The girl is on the left, and the boy is on the right. They are both looking down at the ground as they walk. The background is a soft-focus field of green grass and trees. A blue semi-transparent banner is overlaid on the right side of the image, containing white text.

**Key messages for
policymakers: a call for
more ambitious action at all
levels**

The 2020 goal will not be achieved: business as usual is not an option

The findings of the GCO-II indicate that the sound management of chemicals and waste and minimizing adverse impacts will not be achieved by 2020. Trends data suggest that the projected doubling of the global chemicals market between 2017 and 2030 will increase global chemical releases, exposures, concentrations and adverse health and environmental impacts unless the sound management of chemicals and waste is achieved worldwide. Business as usual is therefore not an option. However, accelerating progress in order to achieve sound management and minimize adverse impacts in the context of the 2030 Agenda is possible under a sustainability scenario. This will require more ambitious, urgent and worldwide collaborative action by all stakeholders and in all countries. [Part I, Ch. 1-8; Part II, Ch. 3-5; Part IV; Part V]

A comprehensive global framework is needed, with ambitious priorities and coherent indicators

To address gaps, a global framework for the sound management of chemicals and waste beyond 2020 needs to be developed that is aspirational, comprehensive, and creates incentives to foster commitment and engagement by all relevant actors in the value chain. Drawing upon lessons learned from the Strategic Plan for Biodiversity 2011-2020, a global common vision, strategic goals, targets and indicators could facilitate linkages across all relevant agreements and initiatives, and make reporting schemes simpler, country-driven and linked to global targets. Under such a scheme,

indicators would need to distinguish between outputs (e.g. adoption of legislation) and impacts (e.g. reduction of adverse impacts from hazardous chemicals). [Part II, Ch. 2; Part V, Ch. 2-3]

Implementation of actions up to and beyond 2020

Responding to the UNEA mandate, and based on a review of implementation of the 2020 goal to date, the GCO-II presents a range of options for the implementation of actions (hereinafter referred to as “actions”) to reach relevant SDGs and targets up to and beyond 2020. The identified actions are considered of particular relevance to developing and implementing an international approach for chemicals and waste management beyond 2020. Equally important, they target policy- and decision-makers around the world and from all stakeholder groups in order to generate enhanced commitment for implementation.

The actions are presented under ten topics which were derived using a back-casting method, imagining a sustainability scenario, where legacy problems are addressed and future legacies are avoided, including through green and sustainable chemistry innovation and sustainable consumption and production. They also cover commitments, already agreed internationally, which require urgent attention and renewed commitment due to implementation gaps. Examples include implementation of the GHS and the strengthening of basic chemicals and waste management systems. The ten areas of action are further spelled out in the Annex of this Synthesis Report. [Part V, Ch. 4]



Develop effective management systems: Address prevailing capacity gaps across countries, strengthen national and regional legislation using a life cycle approach, and further strengthen institutions and programmes.



Assess and manage risks: Refine and share chemical risk assessment and risk management approaches globally, in order to promote safe and sustainable use of chemicals and address emerging issues throughout the life cycle.



Mobilize resources: Scale up adequate² resources and innovative financing for effective legislation, implementation and enforcement, particularly in developing countries and economies in transition.



Use life cycle approaches: Advance widespread implementation of sustainable supply chain management, full material disclosure, transparency and sustainable product design.



Assess and communicate hazards: Fill global data and knowledge gaps, and enhance international collaboration to advance chemical hazard assessments, classifications and communication.



Strengthen corporate governance: Enable and strengthen the chemicals and waste management aspects of corporate sustainability policies, sustainable business models, and reporting.

² To facilitate better understanding of the term “adequate” in this context, further analysis and international dialogue are needed on certain topics such as sustainability of funding.



Educate and innovate: Integrate green and sustainable chemistry in education, research, and innovation policies and programmes.



Foster transparency: Empower workers, consumers and citizens to protect themselves and the environment.



Bring knowledge to decision-makers: Strengthen the science-policy interface and the use of science in monitoring progress, priority-setting (e.g. for emerging issues), and policy-making throughout the life cycle of chemicals and waste.



Enhance global commitment: Establish an ambitious and comprehensive global framework for chemicals and waste beyond 2020, scale up collaborative action, and track progress.

Enhancing commitment by current stakeholders and increasing engagement by new actors

The period up to the conclusion of the intersessional process, by 2020, provides a brief but critical window in which to develop an ambitious and comprehensive global framework – as well as to increase engagement by all stakeholders. To facilitate commitment, ownership, mutual accountability and collective tracking of progress towards achieving the sound management of chemicals and waste, countries and all relevant stakeholders could develop, implement and share internationally results-based action plans and roadmaps. Stakeholders could pledge and showcase their action plans and roadmaps within the beyond 2020 framework and benefit from the input of other stakeholders (which might take different forms, such as peer review). Pledges could be reviewed globally against agreed goals and targets, with adjustments made, as appropriate. [Part V, Ch. 1-3]



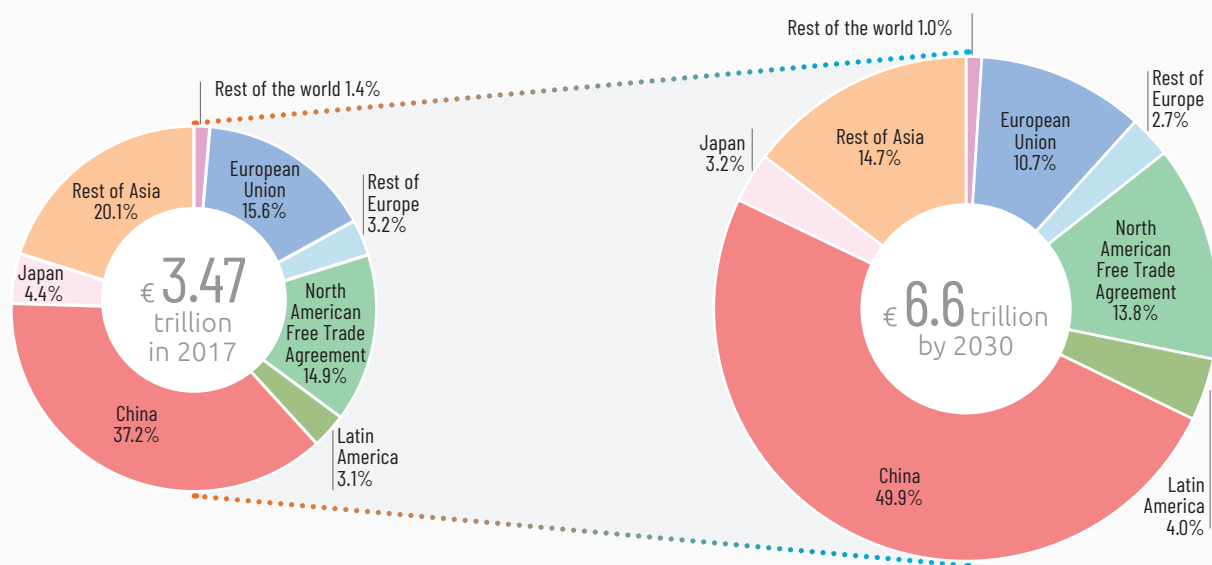
I. The evolving chemicals economy: status and trends relevant for sustainability

While many chemicals are important for sustainable development, trends presented in the GCO-II on releases of chemical pollutants; concentrations in the air, water, soil, biota and humans; and adverse impacts on human health and the environment are a cause for major concerns, requiring urgent action. Unless the sound management of chemicals and waste is achieved worldwide, the projected increase in chemical production and consumption will result in enhanced adverse impacts.

The production, use and trade of chemicals are growing in all regions

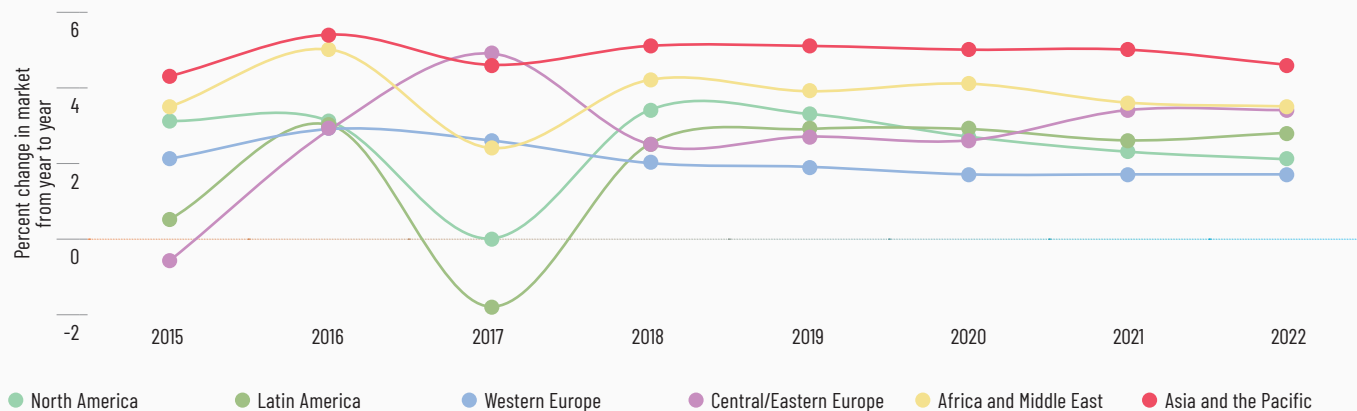
Between 2000 and 2017, the global chemical industry's production capacity (excluding pharmaceuticals) almost doubled, from about 1.2 to 2.3 billion tonnes. If pharmaceuticals are included, global sales totalled US dollars 5.68 trillion in 2017, making the chemical industry the world's second largest manufacturing industry. Growth has occurred not only in the volume and sales

Figure 4 Projected growth in world chemical sales (excluding pharmaceuticals), 2017-2030
(adapted from European Chemical Industry Council 2018, p. 34)



Global chemical sales (excluding pharmaceuticals) are projected to grow from EUR 3.47 trillion in 2017 to EUR 6.6 trillion by 2030. Asia is expected to account for almost 70 per cent of sales by then.

Figure 5 Projection of annual production growth in the chemical industry by region, 2015-2022 (per cent change per year) (adapted from American Chemistry Council 2017)



While production of chemicals is projected to grow in each region, annual growth rates are highest in regions with developing countries and emerging economies, in particular in Asia-Pacific, Africa and the Middle East.

of chemicals, but also in production capacity, suggesting continued future growth in the volume of chemicals produced. Sales are projected to almost double again from 2017 to 2030 (Figure 4). Projected growth will be highest in Asia, with China estimated to account for almost 50 per cent of global sales by 2030. [Part I, Ch. 1]

The production and consumption of manufactured chemicals continues to spread worldwide, with an increasing share now located in developing countries and economies in transition, many of which may have limited regulatory capacity. High growth rates are expected not only in Asia and the Pacific, but also in Africa and the Middle East (Figure 5). As the industry

and its markets are growing, so is international trade in chemicals and products containing chemicals – many of which are hazardous. For example, the value of China's exports of chemicals has increased by 15 per cent since 2013, the year the first GCO was published. [Part I, Ch. 1]

The production and use of some hazardous chemicals addressed by international action have been phased out – as in the case of polychlorinated biphenyls (PCBs), or significantly reduced – as in the case of dichlorodiphenyltrichloroethane (DDT). However, ensuring environmentally sound waste management of these chemicals still poses significant challenges. Production and use of other chemicals causing concern

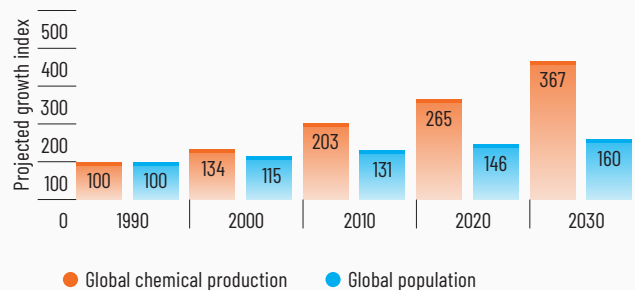
remain stable or are increasing. Despite the regulatory actions taken, the market for most heavy metals (e.g. lead and mercury) remains stable. Production of plastics, fertilizers and pesticides, pharmaceuticals, per- and polyfluorinated substances (PFASs), flame retardants, nanomaterials and other groups of chemicals is increasing in many regions. [Part I, Ch. 2]

Global megatrends and industry sector trends create risks and opportunities

Global society is rapidly changing, driven by megatrends such as population growth, urbanization, globalization, digitalization and climate change. Increasing demand for electric vehicles and the growing market for automobiles in low- and middle-income countries is also expected to lead to increasing numbers of lead-acid batteries, the

recycling of which is highly polluting when conducted informally or without proper pollution and occupational health and safety controls. Global economic growth and global population dynamics affect market demand for chemicals, creating both risks and opportunities. Under a business as usual scenario, the rate of growth of chemical production is projected to exceed that of population growth at least until 2030 (Figure 6). This means per capita consumption of chemicals is increasing steadily – highlighting the need to achieve sustainable consumption and production, as called for by SDG 12 of the 2030 Agenda. It also reinforces the need to decouple material use from economic growth, enhance resource- and eco-efficiency, advance sustainable materials management, and prioritize source reduction, reuse and recycling, as called for by the waste hierarchy. [Part I, Ch. 1, 3]

Figure 6 Growth of basic chemical production capacity vs. population growth
(based on UN Department of Economic and Social Affairs 2018 and Cayuela and Hagan 2019)

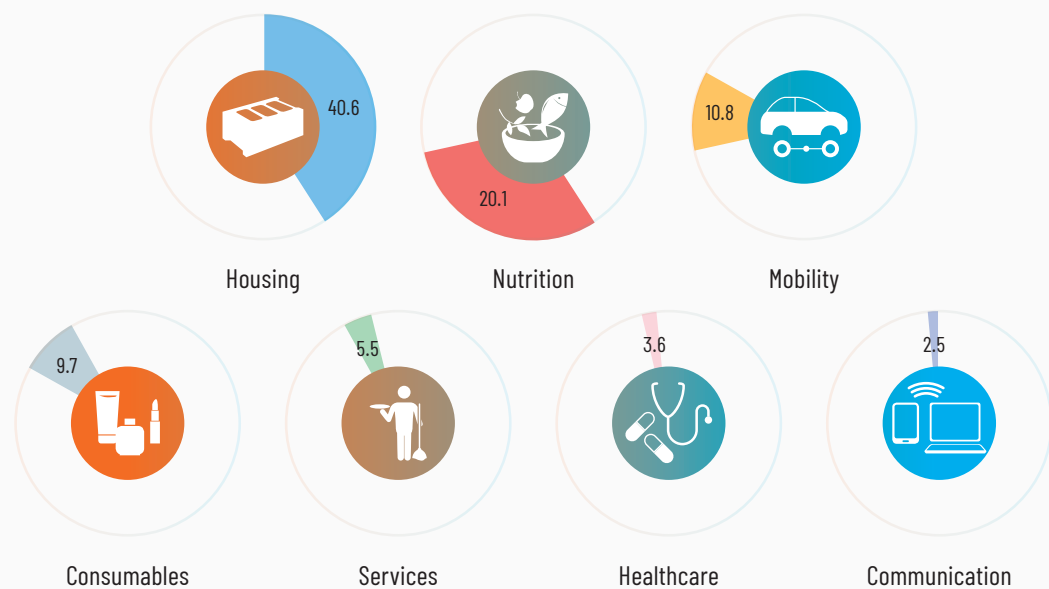


The growth rates of chemical production capacity are derived from past and projected growth rates for basic petrochemical building blocks (ethylene, propylene, butadiene, benzene, toluene, and xylenes). [Part I, Ch. 3]

Growth in chemical-intensive industry sectors, such as construction, agriculture, electronics, cosmetics, mining and textiles, continues to drive growth in the respective chemical markets. For example, the construction sector is expected to grow by 3.5 per cent annually, with its chemicals market projected to grow by 6.2 per cent

annually between 2018 and 2023. The growth of chemical-intensive industry sectors may pose significant risks to human health and the environment. For example, increased demand for weather-resistant textiles may, depending on the chemicals and technologies used, increase the use of PFASs. In addition, concerns have

Figure 7 The global material footprint: extracted resources by key societal needs and consumables (billion tonnes) (based on de Wit et al. 2019, p. 19)



Six key societal needs and consumables represent the largest material footprint globally: housing and infrastructure (ca. 44 per cent), nutrition (ca. 22 per cent), mobility (ca. 12 per cent), consumables (ca. 11 per cent), services (ca. 6 per cent), healthcare (ca. 4 per cent) and communication (ca. 3 per cent). Each of these sectors is chemical-intensive in terms of both production processes and products, which range from asbestos used in steel beams, to pesticides in agriculture, to heavy metals in batteries, to parabens in cosmetics. [Part I, Ch. 1]

emerged about chemical pollution and the management of waste associated with rapidly growing additive manufacturing (also known as 3-D printing). However, growth in industry sectors also creates opportunities for safer products and improved production processes. For example, following the regulation of asbestos in many countries, new business opportunities for safer materials in the building sector have emerged. [Part I, Ch. 3]

Chemicals are linked to and affect global material flows

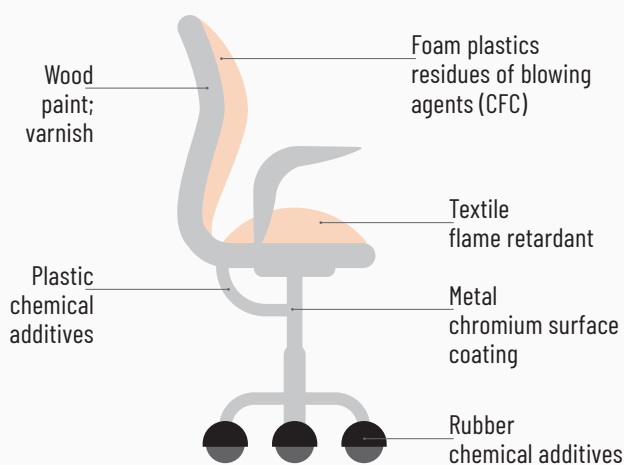
The chemical industry plays an important role in turning raw materials and feedstocks into valuable products. It therefore performs a key function in the global system of production and consumption and is one of the drivers of resource extraction, together with chemical-intensive sectors (Figure 7). Researchers have mapped the magnitude of the chemical sector's material resources flows. In a single year (2015), almost 1.7 billion tonnes of feedstocks (mostly fossil fuels, but also bio-based and renewable feedstocks) and secondary reactants (mostly water) were used in this sector to produce 820 million tonnes of chemical products, while also generating almost the same amount of by-products (mostly carbon dioxide). [Part I, Ch. 1]

The transformation of resources into products containing chemicals also has a qualitative dimension. New compounds are created, in some cases with new or increased hazards. Chlorine chemistry, for example, turns basic feedstocks such as salt and water, together with other chemicals, into useful products such as water purification chemicals. At the same time, chlorine

and many chlorine derivatives, as well as chemicals used in related production processes (e.g. asbestos or mercury), are hazardous and need to be well managed. Moreover, toxic chemicals such as mercury, lead and other heavy metals are mined, incorporated into products and disposed as wastes in the environment, where exposures of people and biota may be high. [Part I, Ch. 1, 2, 5]

It is also of concern that significant resources in value chains are lost due to low recycling rates and are largely unaccounted for. A contributing factor to this is the lack of information about the chemicals in these products, as the market for recycled products with unclear chemical composition is limited. Only 9 per cent of global material

Figure 8 Chemicals in an office chair (adapted from Swedish Chemicals Agency 2016, p. 7)



resources are recycled. Many durable products and buildings, as well as infrastructure and machinery, that contain hazardous chemicals (e.g. certain building materials containing asbestos or brominated flame retardants) remain in human-made material stocks (estimated to weigh 30 trillion tonnes in 2016) for years to come, creating potential future legacies. Mirroring this trend, less than 9 per cent of the 6.3 billion tonnes of plastic waste generated up to 2015 has been recycled, while 12 per cent was incinerated and 79 per cent was disposed in landfills or in the environment. [Part I, Ch. 5]

Chemical-intensive products and complex global supply chains create challenges for circularity

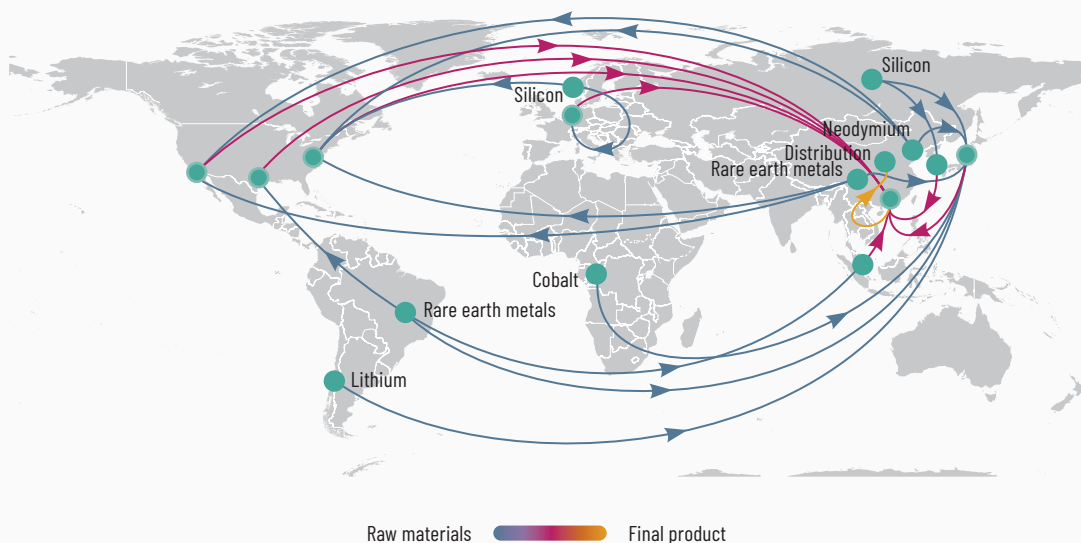
Modern-day products often contain hundreds of chemicals. Many of these chemicals may have hazardous properties. Some of them have raised considerable concern among national government authorities about their potential health or environmental effects. Examples include formaldehyde in shampoo, microbeads in toothpaste, phthalates in food packaging, certain flame retardants in televisions, and antimicrobials (e.g. triclosan) in soaps. Some formulated products (e.g. personal care products and household cleaners) contain chemicals of concern at significant concentrations. For example, the concentration of phthalates (some of which are potential endocrine disruptors) may be as high as 40 per cent in some plastic products. In addition, unintentional contaminants have been widely detected in a range of products. For example, food products may absorb chemicals from packaging, and pesticides may be present in fruits in various concentrations. Unintended chemical

contamination of products may also result from recycling. [Part I, Ch. 4]

The presence of hazardous substances in products, whether intentional or unintentional, poses challenges to circularity and the implementation of the waste hierarchy, which emphasizes source reduction, reuse and recycling. Examples include flame retardants in children's toys made from recycled plastic, and polycyclic aromatic hydrocarbons in rubber playgrounds made from recycled tyres. Advancing sustainable materials management, full material disclosure and enhanced knowledge-sharing throughout the supply chain (including recyclers), and scaling up sustainable product design based on green and sustainable chemistry innovation, are important approaches to address hazardous substances in products throughout their life cycle. These approaches are equally important for minimizing potential future releases from material stocks and products, and for generating safe and sustainable secondary raw materials in a circular economy. [Part I, Ch. 4-5; Part IV, Ch. 1]

Specific challenges are created by the complexity of global supply chains and the cross-border trade of chemicals and chemical-intensive products, spanning many countries with distinct regulatory frameworks. The supply chain for electronics illustrates fragmentation in a specific economic sector and across geographic locations (Figure 9). Management challenges are manifold and include identifying and minimizing releases of chemicals during manufacturing, consumer exposures during product use, and releases during recycling or disposal. A related challenge is the potential exposure of workers at all stages of the supply chain. Complex supply

Figure 9 The complexity of global supply chains: the case of an electronic product
(adapted from Sourcemap 2012)



Chemical-intensive products, such as the electronic product depicted here, are traded through increasingly complex global supply chains, spanning many countries and regions. This poses a variety of management challenges.

chains make it difficult for product manufacturers and retailers to know the chemicals contained in products, a topic addressed in the SAICM Chemicals in Products Programme. Recent research shows that the import of chemicals or products often does not comply with the chemicals legislation of the importing country. Furthermore, rapidly growing direct sales of chemical products via the internet are circumventing traditional distributors, many of which have management systems in place, adding further complexity. Relevant in this

context is that cross-border e-commerce is growing at 25 per cent annually. [Part I, Ch. 4]

Large amounts of chemical pollutants are released from production, products and wastes, illustrating the inefficient use of resources

The production, use and disposal of chemicals continues to cause significant releases of hazardous chemicals to indoor and outdoor environments. Despite the scaling

up of international efforts, global emissions of mercury into the atmosphere rose by around 20 per cent between 2010 and 2015. Releases of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (hereinafter referred to as dioxins and furans) appear to have remained stable globally and to have increased significantly in the Asia-Pacific region. Large amounts of chemicals are also released to oceans and freshwater bodies, including from industrial activities (e.g. trichloroethylene used in solvents) and municipal discharges (e.g. pharmaceutical residues). Agricultural runoff, including pesticides, nitrogen and nitrates, is a major source of water pollution and contaminant of groundwater aquifers. Developing countries and economies in transition face particular challenges, such as releases of heavy metals from battery recycling and of mercury from artisanal and small-scale gold mining, which pollute air, water and soil. [Part I, Ch. 5]

Progress has been made in reducing releases of some chemicals of concern through national regulatory action and multilateral treaties. National policies established in conformance with the Montreal Protocol, for example, have led to the phase out of 99 per cent of ozone depleting chemicals, which has resulted in significant reductions in releases. Emissions of various POPs have decreased significantly since 1990 among Parties to the Convention on Long-range Transboundary Air Pollution (e.g. 95 per cent in the case of hexachlorobenzene). Implementation of the Stockholm Convention is expected to result in decreasing releases of unintentionally produced POPs in all regions. Data from developing countries and economies in transition are limited, but initial results show positive trends. [Part I, Ch. 5]

Production processes continue to generate significant chemical releases to air, water and soil as well as large amounts of waste, including hazardous waste. In the production of pharmaceuticals, for example, at least 25 kilograms (kg) of emissions and waste (and at times more than 100 kg) are generated for every kg of product, highlighting resource inefficiencies. Significant amounts of greenhouse gases are also emitted during the production of chemicals. In addition, chemical accidents in industrial facilities continue to release significant amounts of hazardous substances. Management action and innovative solutions, including innovations in chemistry, can reduce pollution, increase resource efficiency, and reduce the use of hazardous substances (e.g. water-based solvents can replace chlorinated solvents). [Part I, Ch. 5; Part IV, Ch. 1]

Moreover, hazardous chemicals are released from chemical-intensive products, many of which are present in the indoor environment. Examples include formaldehyde volatilized from pressed wood products, biocides leaching from carpets, Bis(2-ethylhexyl)



phthalate (DEHP) released from polyvinyl chloride materials, and microplastics from personal care products. Products such as perfumes, hairsprays, air fresheners, cleaning solvents and glues are all likely sources of volatile organic compounds (VOCs) in indoor air. Other products may contain significant concentrations of phthalates, phenols, flame retardants, chlorinated solvents, heavy metals, PFASs and other chemicals that may be released to indoor air. A 2018 study suggests that releases of chemicals from consumer products (e.g. cosmetics and paints) have become the primary source of VOCs from petrochemical sources in some industrialized cities. The slower release of semi-VOCs, such as phthalates and several classes of flame retardants, is also a cause for concern. [Part I, Ch. 4-5]

Discarding products that include hazardous chemicals may turn municipal waste into hazardous waste. The generation of electronic waste, only 20 per cent of which is recycled globally, is a rapidly growing source of hazardous waste. Since many countries and municipalities lack appropriate infrastructure for the collection, treatment, recycling and disposal of hazardous waste, direct releases to the environment, releases from waste dumps and informal recycling have become major sources of pollution to all environmental media. The use and disposal of certain products which are hazardous thus presents a major challenge. [Part I, Ch. 4-5]

Box 1 Plastics, microplastics and chemicals

- › The annual production of plastics is projected to increase from 335 million tonnes in 2016 to approximately 1124 million tonnes by 2050.
- › The growth of the plastics economy drives demand for chemical additives and chemicals used in the production of plastics. Some of these chemicals are hazardous.
- › Microplastics are accumulating rapidly in the environment. They are now found in the world's oceans, rivers, lakes, soils and air, as well as in salt, honey, beer, bottled and tap water, fish, and human faeces.
- › Recently, significant regulatory actions have been taken – including bans of single-use plastics (e.g. Kenya), a waste import ban (China) and a ban on sales of personal care products containing microbeads (e.g. the United Kingdom) – alongside citizen and private sector initiatives to reduce plastic pollution.
- › However, further voluntary and regulatory action, as well as accelerated research and development of more sustainable alternatives, are needed.



[Part I, Ch. 2, 5-6; Part II, Ch. 3; Part IV, Ch. 1, 7]

Box 2 Legacy chemicals are found in some of the remotest regions of the world

PCBs have been detected at high concentrations in small animals (amphipods) captured 10,000 metres deep in ocean sediment (the Mariana and Kermadec trenches). Some concentrations were higher than in those of animals living in highly polluted rivers in industrialized regions. Another study found certain organochlorine pesticides, regulated under the Stockholm Convention, in Himalayan glaciers. These studies demonstrate that chemicals whose production and use have long been banned may still be found at high concentrations in the environment due to their persistence. Persistent chemicals whose production and use have not yet been banned or restricted may thus create future legacies. [Part I, Ch. 6]



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Chemical pollutants are ubiquitous in the environment and in humans

Chemical pollutants continue to be detected in air, water, soil and biota in all regions. Soils throughout the world are contaminated by hazardous chemicals, including PCBs, heavy metals and certain pesticides. Many hazardous chemicals, as well as microplastics, are found in food for human consumption. Microplastics, pharmaceutical residues, mercury and many other substances of concern have been detected in water bodies and in marine animals, which are often consumed by humans. High concentrations also occur in animals, such as brominated diphenyl ethers in birds in China, and mercury in marine species and bird eggs in North America. Concentrations of chemical pollutants are found in some of the most remote and unexpected parts of the planet (Box 2). [Part I, Ch. 6]

Chemicals of concern are also routinely detected in humans. Examples are dioxins and furans in breast milk,

phthalates in urine, and heavy metals in human blood. Significant variations have been found in concentrations in human milk across analyzed substances, countries and regions. For example, concentrations of certain flame retardants are higher in developed countries, while concentrations of certain pesticides are higher in developing countries and economies in transition. Analyzing concentrations of four bisphenols in samples of adults taken over 14 years, a study found concentrations of bisphenol A to be declining and concentrations of bisphenol S to be increasing, which could reflect the replacement of bisphenol A with bisphenol S. Recent studies have detected previously banned flame retardants in the umbilical cord blood of newborn children, indicating one pathway, among others, for the transfer of legacy substances to new generations, which is a typical feature of persistent and bio-accumulative substances. [Part I, Ch. 6]

Mixed trends can be observed. In Arctic air, for example, concentrations of certain flame retardants seem to be

Box 3 Outcomes of the effectiveness evaluation of the Stockholm Convention (United Nations Environment Programme and Secretariat of the Stockholm Convention 2017, p. 4)

The effectiveness evaluation of the Stockholm Convention made available in 2017 found, among other outcomes, that “monitoring results indicate that regulations targeting POPs are succeeding in reducing levels of POPs in humans and the environment. For POPs listed in 2004 under the Convention, concentrations measured in air and in human populations have declined and continue to decline or remain at low levels due to restrictions on POPs that predated the Stockholm Convention and are now incorporated in it. For the newly listed POPs, concentrations are beginning to show decreases, although in a few instances, increasing and/or stable levels are observed”.



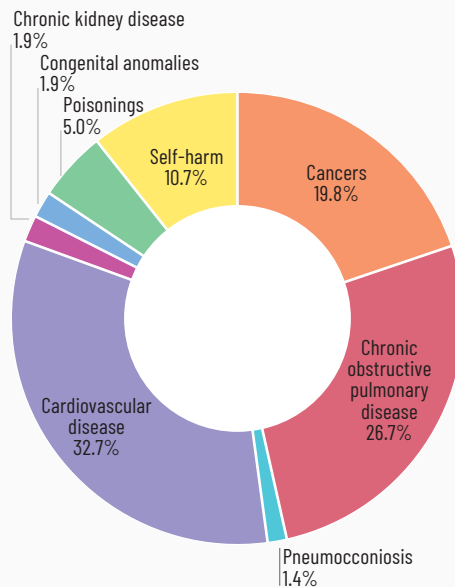
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Colored dye reservoirs and vats in a
traditional tannery

declining while those of others appear to be increasing. Limited available data indicate that concentrations of some POPs (e.g. PCBs and DDT) are decreasing in air and human milk. Blood levels of lead in humans are declining in different regions across the globe, including southern Africa, China and North America. However, high levels are still measured in a number of developing countries (e.g. the Philippines and Nigeria). [Part I, Ch. 6]

The burden of disease from chemicals is high, and vulnerable populations are particularly at risk

Examples of the adverse effects of hazardous chemicals include deaths from acute poisonings involving heavy metals or pesticides, intellectual disability from exposure to lead, cancer caused by exposure to asbestos or dioxins, and endocrine disruption from various chemicals. The 2017 report of the *Lancet* Commission on Pollution and Health identified chemical pollution

Figure 10 Deaths (total: 1.6 million) attributed to selected chemicals in 2016 (adapted from WHO 2018, p. 2)



as a significant and “almost certainly underestimated” contributor to the global burden of disease. [Part I, Ch. 7]

In 2018, the WHO estimated the disease burden preventable through sound management and reduction of chemicals in the environment at around 1.6 million lives and around 45 million disability-adjusted life years in 2016 (Figure 10). These are likely to be underestimates, given that they are based only on exposures to chemicals for which reliable global data exist (including lead causing intellectual disability, occupational carcinogens such as asbestos and benzene, and pesticides involved in self-inflicted injuries). The 2016 Global Burden of Disease study published in the *Lancet* estimated that in 2015 almost 500,000 deaths are attributable solely to lead exposure. In addition, chemical accidents in facilities continue to result in high human fatalities, adverse environmental impacts and high economic costs. [Part I, Ch. 7]

Workers are typically subject to disproportionately high exposures to hazardous chemicals, particularly in small and medium-sized enterprises (SMEs) in developing countries and economies in transition and in the informal economy, where they may not be sufficiently informed and protected. Workers are exposed to hazardous chemicals throughout the supply chain, from extraction, to manufacturing, to recycling and disposal. In 2015, almost 1 million workers died from exposure to hazardous substances, including dusts, vapours and fumes (an increase of more than 90,000 workers compared to 2011), based on estimates released by the ILO. [Part I, Ch. 7]

Foetuses, infants, children, pregnant women, the elderly and the poor are among the most vulnerable to the adverse effects of chemicals and waste. For example, the foetal brain is especially vulnerable to methylmercury. The poor may be disproportionately exposed because they frequently live near sources of hazardous chemical releases, such as hazardous waste dumpsites and manufacturing facilities. Vulnerability and exposures of women and men to chemicals may also differ. In general, women are often more likely to be exposed to hazardous chemicals in certain cosmetics, while men have significantly higher occupational exposures in certain sectors. [Part I, Ch. 7]

Chemical pollution threatens biota and ecosystem functions

A range of adverse impacts of chemical pollutants on biota continue to be observed. Examples include lethal and chronic effects on fish from brominated flame retardants; suppression of immune systems in seals and turtles due to exposure to PCBs and PFASs; and dioxins causing the thinning of some bird eggs. Certain chemicals have been found to have endocrine-disrupting effects on some animals. Examples include feminization of male fish due to exposure to synthetic oestrogen, and abnormalities in the reproductive system in alligators caused by pesticide pollution. A 2018 study from India indicates that the drug diclofenac continues to adversely affect the health of the vulture population more than a decade after it was banned. [Part I, Ch. 7]

Impacts of hazardous chemicals in weakening or putting stress on ecosystems and life support functions have also been observed. The depletion of the ozone layer is a prominent example of how certain chemicals may affect the functioning of a critical life support system. A number of critical ecosystem services are also affected by chemical pollution. For example, some pesticides have been found to negatively impact non-target insects and pollinators such as bees, as well as nutrient cycling and soil respiration. Excess use of phosphorous and nitrogen in agriculture continues to contribute to ocean dead zones around the world. Furthermore, some chemicals (e.g. those used in sunscreens) put pressure on the health of coral reef ecosystems. Studies also indicate that environmental releases of some antimicrobials, heavy metals and disinfectants contribute to antimicrobial resistance. [Part I, Ch. 7]

The costs of inaction and the benefits of action are estimated to be significant, but methods need to be refined

The costs associated with unsound management of chemicals and waste include productivity losses, health care costs, damage to ecosystems, litigation costs, and reputational damage to businesses. A 2015 study estimated the costs from neurobehavioural deficits caused by certain chemicals to be more than US dollars 170 billion per year in the EU alone. Another study estimated the economic costs attributable to childhood lead in low- and middle-income countries at a total cost of international dollars 977 billion. Some studies estimate costs from environmental chemical exposures to be as high as several percentage points of global gross domestic product, with developing countries

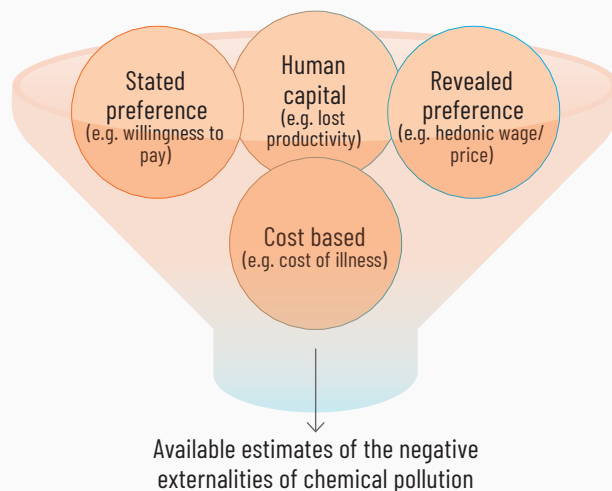
Box 4 How robust is the global knowledge base to support sound management of chemicals and waste

Although a wealth of data and knowledge has been generated, many data gaps and unknowns remain. Knowledge about the number and volumes of hazardous chemicals already on the market, as well as those newly entering it, is lacking in many countries and regions. While environmental, health and safety data are available for the majority of the highest production volume chemicals, knowledge gaps remain for many lower production volume chemicals. Complete data sets concerning the hazard potential of a significant number of chemicals are missing. Knowledge is also still very limited regarding outdoor and indoor releases of chemicals both during production processes and from products, exposures in varying contexts, concentrations of various hazardous chemicals in environmental media, and the adverse impacts of chemicals (e.g. on health). Disparities remain in data collection and availability across time and countries, making the identification of baselines, trends, and emerging issues and priorities challenging. Various barriers (e.g. insufficient communication of policy needs to scientists, and vice versa) pose challenges in making policy-relevant knowledge available for informed decision-making. [Parts I-III]

and economies in transition bearing the highest costs. Conversely, both regulatory and voluntary action can deliver socio-economic benefits in the form of reduced or avoided damage to human health and the environment. A 2017 study conservatively estimated the cumulative benefits of chemicals legislation in the EU to be “in the high tens of billion Euro per year”. [Part I, Ch. 8]

However, robust socio-economic analysis is challenging and estimation methodologies need further refinement. A key challenge is the existence of multiple causal factors, making it difficult to establish epidemiological relationships and attribute costs and benefits to specific actions. This is aggravated by a lack of data for quantifying, and assigning monetary values to, the physical impacts of chemical releases. A global study of the economic and social effects of using harmful chemicals, comparable to the Stern Review on the Economics of Climate Change, does not exist. Such a study could raise awareness of the global scale of these effects and catalyse further action. [Part I, Ch. 8]

Figure 11 Identifying the economic costs of inaction and the benefits of action [Part I, Ch. 8]



Box 5 Pharmaceuticals and the environment

- › Pharmaceuticals are one of the chemical industry's fastest growing segments. This segment has a projected annual growth rate of 6.5 per cent, to reach more than US dollars 1 trillion by 2022.
- › Due to releases from various sources, pharmaceutical residues are present worldwide in surface water, groundwater, soil and other environmental media.
- › Some pharmaceuticals are transferred within food webs (e.g. accumulating in riparian spiders) and taken up by plants (e.g. food crops). In some river streams, exposure of aquatic and riparian biota to certain pharmaceuticals may be comparable to human dosages.
- › Some pharmaceuticals have been found to have endocrine-disrupting effects in animals (some pharmaceuticals being intentional endocrine disruptors).
- › Evidence is mounting that environmental releases of some antimicrobials, as well as heavy metals and disinfectants, contribute to the spread of antimicrobial resistance.
- › Research on green and sustainable pharmacy reveals opportunities such as resource efficiency in production processes, and mineralization of pharmaceuticals in the environment.
- › Opportunities also exist to include environmental criteria in good manufacturing practices.

[Part I, Ch. 2, 5-7; Part II, Ch. 4; Part IV, Ch. 1]



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II. Where do we stand in achieving the 2020 goal – assessing overall progress and gaps



In 2002 at the WSSD, Governments agreed to “achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment [...]”. The decision also encouraged actions at all levels, including the ratification and implementation of relevant international instruments, development of a strategic approach to international chemicals management, implementation of the GHS by 2008, and the establishment of Pollutant Release and Transfer Registers (PRTs). Findings of the GCO-II indicate that while many countries have made progress across these and other areas, major gaps remain. [Introduction; Part II]

Many countries and regions have strengthened their legal and institutional capacities

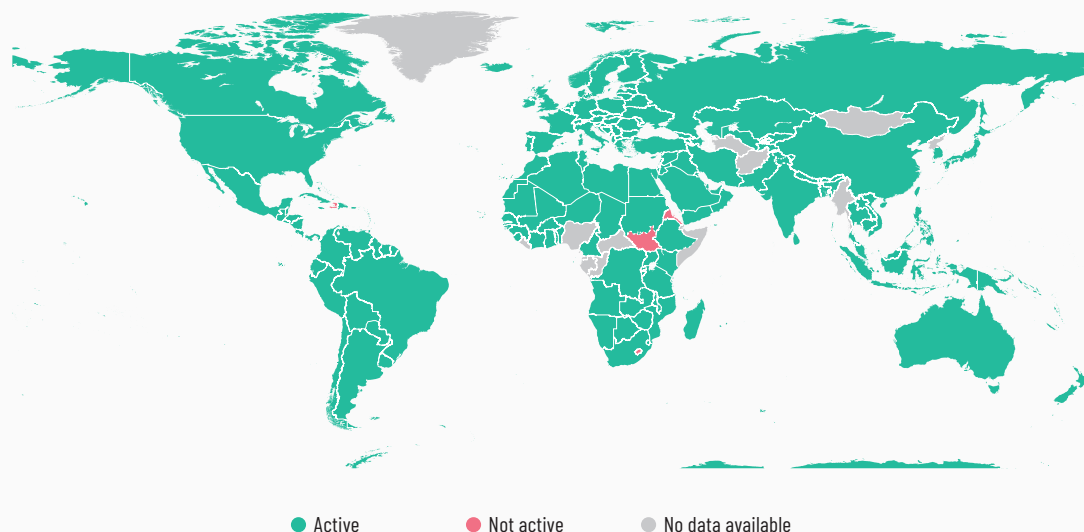
Many countries have already made important headway in enacting laws, creating programmes, and implementing policies to achieve the sound management of chemicals and waste. Examples of major legal and policy initiatives or reforms in developed countries include adoption of the EU’s Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (2006), Japan’s Chemical Substances Control Act (amended in 2009), Canada’s Chemicals Management Plan (latest phase launched in 2016), and the US Lautenberg Chemical Safety for the 21st Century Act (2016). Since the first GCO, a number of developing countries and economies in transition have taken major steps, for example China with its Five-Year Plan for Chemical Environmental Risk Prevention and Control (2013). Several countries in Latin America and

the Caribbean have established overarching chemicals management policies, for example Honduras in 2013, Ecuador in 2015 and Chile in 2017. Others have taken initial – but critical – steps, for example India with its draft National Action Plan for Chemicals, Kenya with its draft Environmental Management and Coordination (Toxic and Hazardous Chemicals and Materials Management) Regulations 2018, and Brazil with its landmark draft law on the inventory, evaluation and control of chemicals. These examples create the potential for cooperation, knowledge-sharing and potential replication. [Part II, Ch. 3]

Progress in the implementation of legal frameworks for pesticides is advancing. Yet significant further work is needed to fully implement best practices and minimize adverse effects from the use of pesticides. The voluntary Code of Conduct serves as a point of reference in relation to sound pesticide management throughout the life cycle, including for the development of legislation. In particular, it provides a critical reference for public and private entities engaged in, or associated with, the production, regulation and management of pesticides. [Part II, Ch. 3]

Regulatory bodies in all regions have also been taking action to identify, assess and manage a number of priority chemicals of concern. Prominent examples include Canada’s Chemicals Management Plan, China’s Prioritized List of Substances Subject to Control, the EU’s list of Substances of Very High Concern (SVHC) and the US Environmental Protection Agency’s Toxic Substances Control Act Work Plan. Moreover, a number of countries have adopted policies and programmes addressing

Figure 12 Countries with pesticide legislation, according to Food and Agriculture Organization of the United Nations (FAO) data collected in the context of the Code of Conduct (adapted from FAO 2018)



certain aspects of the safety of chemicals in products. Examples include Russia's regulation on chemicals product safety (2016), new toy safety standards in Egypt (2018), and several restrictions by countries in West Asia on chemicals in electrical and electronic equipment (2018). Some recent initiatives have focused on specific chemicals (e.g. Nigeria's national policy framework for the management of PCBs of 2015), while others focus on waste management and recycling (e.g. a 2016 act in Ghana). [Part II, Ch. 3]

Countries save resources by aligning and harmonizing their policies

While national priorities and instruments provide the basis for sound management of chemicals and waste, countries can save significant resources by aligning their approaches with those of other countries or with internationally agreed guidance. Such guidance includes that developed, for example, by the Organisation for Economic Co-operation and Development (OECD) and the WHO. Countries such as Brazil, Costa Rica, Malaysia and Thailand are aligning their legislative approaches with policy and technical guidance provided by the

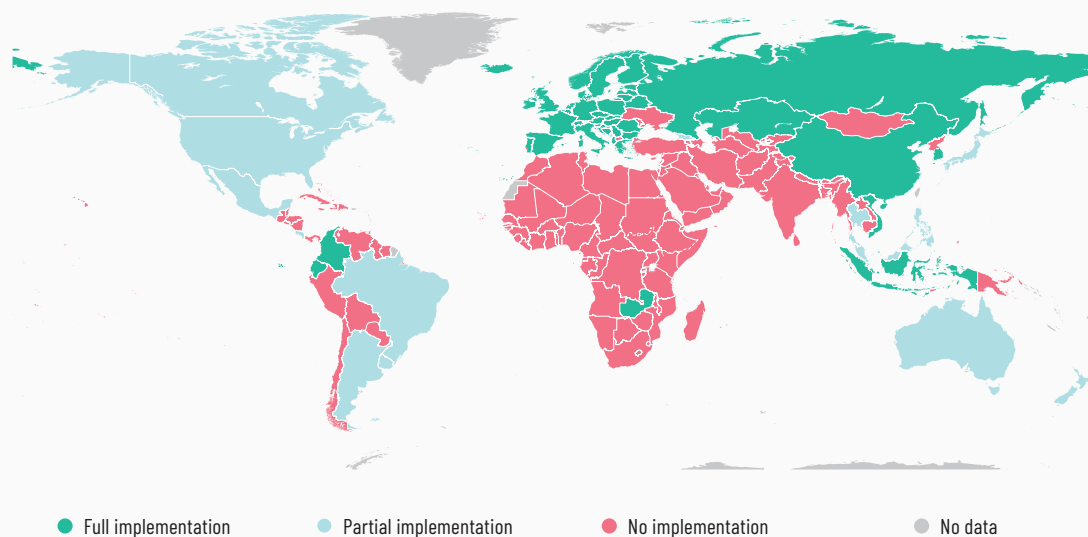
Table 2 Examples of regional institutions and initiatives addressing chemicals and waste management [Part II, Ch. 3]

Region	Examples of institutions and initiatives	Examples of implementation bodies activities
Latin America and the Caribbean	Southern Common Market	Action Plan on Chemical Substances and Products Ad-hoc group on environmental management of chemical substances and products
	Andean Community of Nations	Registry and trade control of chemical pesticides for agricultural use
	Regional Intergovernmental Network on Chemicals and Waste	Identification of regional priorities on chemicals and waste First Action Plan for 2019-2020
Asia-Pacific	Association of Southeast Asian Nations (ASEAN)	Establishment of the ASEAN-Japan Chemical Safety Database (2016)
	South Asia Association for Regional Cooperation	Development of regional standards for chemicals and chemical products
	Secretariat of the Pacific Regional Environment Programme	Projects to strengthen legislative frameworks and waste management capacity
West Asia	Gulf Cooperation Council	Common System for the Management of Hazardous Chemicals
Africa	Economic Community of West African States	Sahelian Pesticide Committee and West African Committee for Pesticide Registration Harmonization of chemicals' data requirements and test guidelines
	Southern African Development Community (SADC)	Technical Regulations Liaisons Committee SADC Policy on the GHS (2013)
Europe and Central Asia	Eurasian Economic Commission	Single registry of chemical materials and substances Adoption of a technical regulation on the safety of chemical products (2018)
	Commonwealth of Independent States	Harmonization with the GHS Cooperation on e-waste management
	European Union	REACH Regulation (2006) Regulation on Classification, Labelling and Packaging of substances and mixtures (CLP) (2008) Biocidal Products Regulation (2012)
North America	North America Agreement on Environmental Cooperation	Commission for Environmental Cooperation supports cooperation to address environmental issues of continental concern

OECD in areas such as testing of chemicals. Close trade relationships facilitate such alignment. Several countries (e.g. Turkey and the Republic of Korea) have modelled their regulations based on the EU's REACH legislation. These alignments and harmonization efforts create cost savings through benefiting from progress made in regions with advanced schemes, sharing workloads and facilitating trade. Altogether, such opportunities point to the value of scaling up global knowledge-sharing and capacity development, building on work undertaken by intergovernmental organizations and other stakeholders. [Part II, Ch. 3]

Cooperation across countries, including at the regional level, can provide important benefits, for example through sharing experiences and lessons learned. Numerous success stories showcase how regional institutions and organizations have advanced regulatory harmonization and the development and implementation of policy-oriented action plans across regions (Table 2). Close trade relationships create opportunities for collaboration and harmonization, while maintaining a high standard of protection. Regional economic and political integration organizations have assumed an important role in addressing chemicals and waste in all regions. [Part II, Ch. 3]

Figure 13 Global GHS implementation status (adapted and updated based on Persson *et al.* 2017, p. 8)



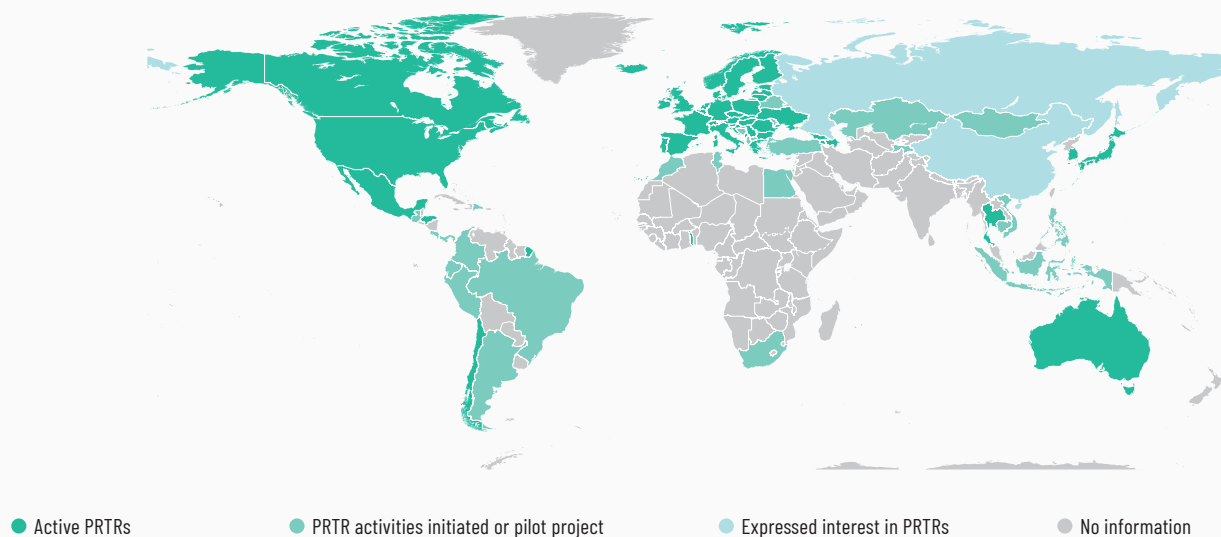
In achieving the environmentally sound management of chemicals and waste, each region faces a set of distinct trends, challenges and opportunities. To identify chemicals and waste management priorities, as well as to develop appropriate solutions, it is therefore important to consider regional dimensions and differences. Multilateral environmental agreements (e.g. the Basel Convention and the Stockholm Convention) have established networks of regional centres to provide technical assistance and training, as well as to promote the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of their obligations under the treaties. Under SAICM, regular meetings are held, among others,

to discuss regional priorities and explore opportunities for regional collaboration. Opportunities exist to create further linkages among various regional processes and initiatives. [Part I, Ch. 3; Part II, Ch. 3]

Overall progress towards achieving the sound management of chemicals and waste is uneven across countries, regions and actors

While significant progress has been made towards achieving the sound management of chemicals and waste, major implementation gaps remain. In particular, developing countries and economies in transition, including some with chemical production

Figure 14 Status of PRTRs (adapted from United Nations Institute for Training and Research [UNITAR] 2018a)



facilities and projected growth in chemical production and consumption, still lack basic chemicals and waste management systems. For example, despite the GHS having been explicitly addressed by WSSD, it is not operational in more than 120 countries, mostly developing countries and economies in transition (Figure 13). [Part II, Ch. 3]

Furthermore, many countries still lack PRTRs (Figure 14), poison centres, and capacities for hazard and risk assessment and risk management. Gaps are particularly prevalent in the case of industrial chemicals and consumer products, with regulations on lead in paint being a revealing indicator: as of September 2018, only 37 per cent of countries had confirmed that they have legally binding controls on lead in paint. Moreover, even if regulations on specific chemicals are in place,

implementation and enforcement may pose challenges. For example, news emerged in 2018 that the production and use of trichlorofluoromethane (CFC-11), a powerful ozone-depleting substance banned under the Montreal Protocol and also a potent greenhouse gas, may be ongoing. As regards e-commerce, 82 per cent of advertisements for hazardous chemical mixtures sold on the internet, recently investigated in EU countries, were found to be non-compliant with the EU's CLP Regulation. Concerning illegal international traffic, chemicals and waste (e.g. electronic waste) are frequently falsely declared while counterfeit products (e.g. pesticides and cosmetics) are traded across borders. [Part II, Ch. 3]

Progress has been made in many areas. For example, the number of countries having established PRTRs and implementing the GHS has increased since 2010.

Table 3 Status of selected indicators of progress on the Global Plan of Action prepared under SAICM
[Part II, Ch. 3]

Indicator	Targets in SAICM GPA	Status in 2010	Status in 2016/ 2017
The GHS is implemented	2006-2010	41	65
PRTRs are established in all countries	2015	35	50
Number of countries that have adopted the Code of Conduct has increased	2010	n.a.	173
Responsible Care® is implemented in all relevant countries	2010	60	68
Poison centres are established in all countries	2010	91	90

However, progress remains insufficient, pointing to an urgent need to take concerted action to develop basic chemicals management systems in all countries (Table 3). [Part II, Ch. 3]

Similarly, industry involvement has not been sufficient and challenges have been noted regarding voluntary industry standards and initiatives. While industry is involved through programmes such as Responsible Care®, universal coverage is yet to be achieved. For example, major gaps remain in the implementation of Responsible Care® in a number of countries. Opportunities exist to review these programmes' effectiveness through the involvement of relevant stakeholders, as well as to scale up industry responsibility and leadership, drawing upon lessons learned, for example from the ZDHC initiative in the textile sector. Private initiatives, such as proactive standard-setting in downstream sectors beyond compliance (e.g. in the textile sector), could be strengthened through universal private sector participation. It could also stimulate similar initiatives in other chemical-intensive sectors. While such initiatives do not reduce the need for adequate legislation to define the role of industry, they could become important building blocks under a future approach to chemicals and waste management beyond 2020 and further advance implementation of the polluter pays principle. [Part II, Ch. 3; Part III, Ch. 4]

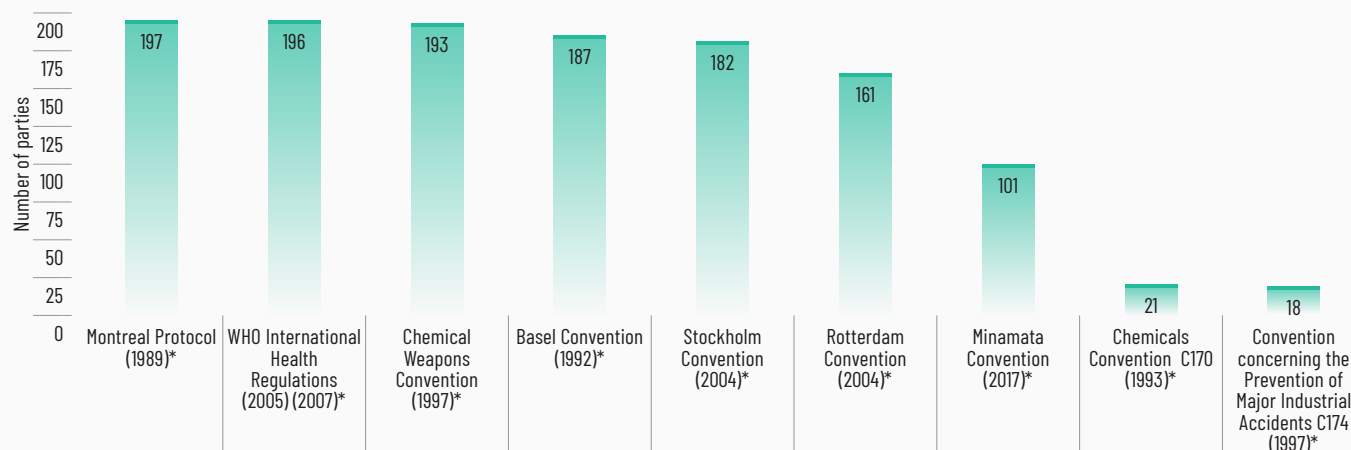
Multilateral treaties address some chemicals and issues of global concern, but implementation challenges remain

The international community has taken concerted action through legally binding treaties on some of

the most harmful chemicals and on some issues of global concern. These treaties have catalysed selected regulatory actions, raised awareness, and succeeded in reducing some exposures to the targeted chemicals and wastes. Given that treaties are designed to address specific chemicals and issues – for example, some mainly focus on specific stages of the life cycle or specific



© UNITAR / Jordan De Haan,
Artisanal and small scale gold miner

Figure 15 Number of Parties to relevant multilateral legally binding treaties (as of 14 January 2019)

* year of entry into force

While some multilateral treaties, such as the Montreal Protocol and the WHO International Health Regulations (2005), have been virtually universally ratified, this is not the case for all of the treaties on chemicals and waste. [Part II, Ch. 1]

issues (e.g. ILO C174), specific chemicals (e.g. the Minamata Convention) or groups of chemicals (e.g. the Stockholm Convention) – many hazardous substances are beyond their scope. Levels of ratification are high in many cases, while in others positive trends can be identified (Figure 15). For example, between 2010 and 2018 the number of Parties increased from 173 to 187 for the Basel Convention, from 140 to 161 for the Rotterdam Convention, and from 172 to 182 for the Stockholm Convention. However, the ratification of a

treaty is a valuable but not sufficient indicator to assess implementation. [Part II, Ch. 1, 3]

The Montreal Protocol, a widely cited success story of international cooperation, has succeeded in removing ozone-depleting substances from the atmosphere and protecting the ozone layer, thus avoiding more than 100 million cases of skin cancer. The Basel Convention has strengthened national capacities for the environmentally sound management of hazardous

wastes; the Rotterdam Convention has facilitated exchange of critical information on the trade of hazardous substances; and the production and use of various POPs has been restricted or eliminated under the Stockholm Convention. The Minamata Convention on Mercury is also expected to achieve positive results, for example by facilitating formalization of the artisanal and small-scale gold mining sector; phasing out the use of mercury in various products; and ensuring the environmentally sound management of mercury wastes. [Part II, Ch. 1, 3]

The extent to which the objectives of a number of treaties have been achieved is uncertain. For example, the 2016 effectiveness evaluation of the Stockholm Convention concluded that “the Convention provides an effective and dynamic framework to regulate persistent organic pollutants throughout their life cycle”. However, it identified areas for further work, such as gaps in regulatory and assessment schemes for industrial chemicals and the large remaining stockpiles of obsolete pesticides and PCBs. Significant progress has also been made in the case of other treaties. Nevertheless, further efforts are needed to achieve full implementation, as in the case of the chemicals dimension of the International Health Regulations (2015). [Part II, Ch. 3]

SAICM provides a unique voluntary policy framework, but weaknesses have been identified

The 2018 independent evaluation of SAICM found that it is unique in its ambition as an inclusive multi-stakeholder, multi-sector voluntary policy framework. The evaluation also found that SAICM creates a collaborative space for raising awareness, increasing knowledge and

reducing risks. However, it pointed out weaknesses, such as insufficient sectoral engagement; the capacity constraints of national focal points; lack of tools to measure progress; limited financing of activities; and insufficient and uneven advances in substantive areas such as illegal international traffic. While the second progress report (2014) prepared under SAICM noted that stakeholders reported an increase in the number of activities undertaken for most indicators, such as on hazardous waste management arrangements, it was not possible to measure progress under the third report (2019) due to a very low response rate. [Part II, Ch. 1, 3]

Emerging policy issues identified internationally, but further action needed

To date, the ICCM has identified eight emerging policy issues (EPIs) and other issues of concern, understood to be issues involving any phase in the life cycle of chemicals and which have not yet been generally recognized, are insufficiently addressed or arise from the current level of scientific information, and which may have significant adverse effects on human health and/or the environment. The independent evaluation noted that the identification of, and actions taken on, the eight EPIs and other issues of concern were a major strength and uniqueness of SAICM, including by raising awareness. Nevertheless, it found that slow, modest and uneven progress has been made in implementing actions to address the EPIs, with the exception of lead in paint. The GCO-II provides evidence concerning a number of remaining challenges and presents a range of measures to further address the EPIs and other issues of concern (Table 4). [Part II, Ch. 4]

Table 4 Emerging policy issues and other issues of concern identified by the ICCM [Part II, Ch. 4]

EPIs and other issues of concern	Selected implementation measures identified by the GCO-II
Lead in paint	Urgently ensure that all countries have legally binding controls in place towards the phase-out of the manufacture and sale of lead paint.
Hazardous substances within the life cycle of electrical and electronic products	Ensure that all countries have regulations in place to protect workers, consumers and recyclers, while also advancing voluntary action.
Highly hazardous pesticides (HHPs)	Further scale up integrated pest management (IPM) and agro-ecological approaches, including development and use of non-chemical alternatives and other good agricultural practices.
Chemicals in products	Develop harmonized protocols to collect, manage, report and communicate information about chemicals in products across supply chains.
PFASs and the transition to safer alternatives	Generate further knowledge and advance international action on short-chain PFASs and non-fluorinated alternatives.
Environmentally persistent pharmaceutical pollutants	Provide incentive structures to advance green and sustainable pharmacy.
Endocrine-disrupting chemicals (EDCs)	Enable systematic screening and identification of EDCs by implementing scientific data requirements and assessment as part of national chemicals legislation.
Nanotechnology and manufactured nanomaterials	Enable systematic assessment of the risks of manufactured nanomaterials by further developing standardized tests.

Recent regulatory action taken based on emerging evidence of risk

The UNEA mandate requested that the GCO-II address other issues where emerging evidence indicates a risk to human health and the environment. A criteria-based approach was taken, whereby identification of recent (since 2010) assessments and regulatory risk management actions taken by public bodies on a

chemical (or group of chemicals) not already covered under a multilateral treaty or SAICM was used as a starting point. The approach taken does not aim to conduct and deliver an international science-based assessment of specific chemicals or groups of chemicals. Rather, it is meant to facilitate international sharing of knowledge. By undertaking a meta-review and drawing attention to existing prioritization and risk management action, the objective is to facilitate understanding of

issues of potential interest to governments and other stakeholders. [Part II, Ch. 5]

taken precautionary action based on existing knowledge. [Part II, Ch. 5]

The criteria used resulted in the identification of issues for the following chemicals or groups of chemicals: arsenic, bisphenol A, glyphosate, cadmium, lead, microbeads, neonicotinoids, organotins, polycyclic aromatic hydrocarbons, phthalates and triclosan. While, for some of these, concerns had existed for a long time (e.g. regarding lead, which continues to be widely used in applications other than paint), recent regulatory action has been taken in several countries in light of new evidence on lower thresholds for adverse effects or additional evidence related to specific uses. In other cases, additional or new evidence has emerged in recent years, prompting regulatory action (e.g. on microbeads). In yet other cases, some countries have

National capacity development and action remains a priority

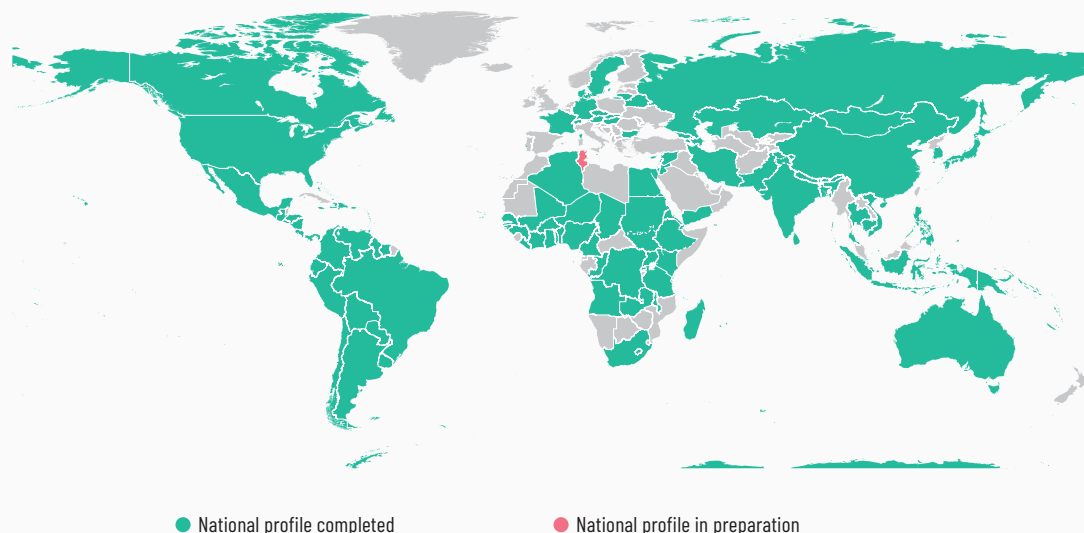
Valuable work has also been undertaken by countries through the development of national chemicals management profiles and plans to strengthen national chemicals and waste management programmes in a systematic and coordinated way. National profiles feature the status and gaps in areas such as legislation, institutional arrangements, and information systems (Figure 16). Often prepared through multi-sectoral and multi-stakeholder collaboration, they have led to the establishment of inter-ministerial committees in a number of countries, led to the production of country

Box 6 Identification of priority chemical issues at the international level

A diverse set of mechanisms has been established at the international level to identify emerging issues and set priorities for action. Bodies engaged in international prioritization efforts include, but are not limited to, the ICCM, the Persistent Organic Pollutants Review Committee of the Stockholm Convention, and the Scientific Assessment Panel of the Montreal Protocol. Existing bodies use different procedures, methodologies, selection criteria and organizing frameworks. Under the ICCM, EPIs are identified through a process whereby any SAICM stakeholder may submit nominations which, following several intermediate steps to review and group the nominations, are considered by the Open-ended Working Group and eventually by the ICCM. This process has resulted in the identification of a diverse set of issues ranging from endpoint-focused issues (e.g. EDCs), and specific applications (e.g. lead in paint), to broader management topics (e.g. chemicals in products). The Persistent Organic Pollutants Review Committee undertakes systematic science-based chemical-by-chemical assessments based on proposals received by Parties.

In developing a possible future process to identify international issues of concern beyond 2020, lessons learned from these mechanisms, and ensuring the complementarity of processes, are important, as is the use of science-based criteria for prioritization (e.g. use of information about health and environmental impacts and harm caused, and drawing on information from risk assessments). [Part II, Ch. 3-5]

Figure 16 National profiles to assess the chemicals and management infrastructure
(adapted from UNITAR 2018b)



National profiles have been prepared in many countries through multi-sectoral and multi-stakeholder collaboration. They provide valuable information to support future action. [Part II, Ch. 3]

baseline information, and facilitated the identification of priority actions. More recently, the Special Programme to support institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention and SAICM has been operationalized to support country-driven institutional strengthening at the national level. It is currently funding projects in 24 countries. These initiatives provide a useful starting point for country-level action beyond 2020, taking into account SAICM's overall orientation and guidance. [Part II, Ch. 3]

Nevertheless, there has been a loss of momentum, marked by lack of sufficient funding for developing countries and economies in transition to develop basic capacities. Building on existing work, guidance could be adjusted to support the development or updating of national action plans and to link them further to internationally agreed targets and milestones under a beyond 2020 approach. Moreover, national profiles and action plans could be showcased and undergo review, including peer review, by interested stakeholders to

provide feedback on potential measures likely to have the highest impact. [Part II, Ch. 3]

Effective implementation requires adequate financing, technology transfer and technical assistance

The integrated approach to financing, welcomed by the Governing Council of UN Environment in 2013, includes the three components of mainstreaming, industry involvement, and dedicated external financing. Further action is required to achieve full implementation of the integrated approach with respect to all three components. Action is also required in order to explore new opportunities such as sovereign wealth funds, philanthropic finance, and strengthened engagement of the financial sector and investors, so as to mobilize and help guide largely untapped resources to contribute to sustainable development. [Part II, Ch. 3; Part IV, Ch. 6]

Mainstreaming occurs when governments integrate sound management of chemicals and waste into their development plans and/or priorities, which has been successfully practised by various countries. However, limited progress has been made. Few success stories are known where mainstreaming of projects was followed up by the allocation of resources from national budgets/resources. Zambia retained fees raised through licensing of chemicals manufacture and registration, importation and export, and used them for monitoring and enforcement. However, this scheme has been discontinued. In further advancing the mainstreaming agenda, linkages with the SDGs could serve as an entry point to integrate chemicals and waste into sectoral policies (e.g. housing, agriculture, energy). Opportunities

also exist to embed sound chemicals management in a broader environment and health agenda. [Part II, Ch. 3]

Industry involvement refers to resources for the chemicals and waste agenda generated by the involvement of industry. A number of countries have clarified responsibilities between the public and private sector; promoted extended producer responsibility and the internalization of costs by industry; and used fiscal instruments. Industry involvement has also been important in mobilizing resources and has built capacity, including through testing, material safety data sheets, information-sharing and voluntary product stewardship. However, gaps remain in increasing contributions to match responsibility and the required level of support. Further efforts are needed in many countries to adopt legislation to internalize cost, as well as to expand the use of economic instruments. Further public-private partnerships could be established to design and implement chemicals management capacity development initiatives, with adequate monitoring in place to measure results. [Part II, Ch. 3]

Dedicated external financing to support countries in implementing their legal obligation, and other commitment, to sound management of chemicals and waste has been forthcoming through various mechanisms. External funding (e.g. through the Global Environment Facility, the Special Programme, the now discontinued SAICM Quick Start Programme, and bilateral development assistance) has been significant, but has not matched the need, and demand for support, expressed by developing countries and economies in transition, for building basic chemicals and waste management systems. The creation of linkages with the

implementation of the 2015 Addis Ababa Action Agenda of the Third International Conference on Financing for Development could help generate investments for chemicals and waste as a critical element in implementing the 2030 Agenda. [Part II, Ch. 3]

A global coherent results, indicator and reporting framework is lacking

The current international framework for reporting and measuring progress in the area of chemicals and waste is spread across various treaties, voluntary chemicals and waste instruments, and the 2030 Agenda. A range of different – and not always complementary – indicators and reporting schemes have been developed under various international agreements (Table 5). The combination of a fragmented indicators framework and low reporting makes it challenging to develop a global baseline, and to track progress in a systematic way. Moreover, the use of activity- or instrument-based indicators (rather than impact indicators) alone provides limited insights in assessing impacts achieved. [Part II, Ch. 2]

Reporting rates under several agreements are low, particularly among developing countries and economies in transition. In some cases reporting rates exhibit a downward trend. In 2016, full reporting compliance had been achieved by only 10 per cent of the Parties under the Basel Convention and only 22 per cent under the Stockholm Convention. Reporting rates under SAICM have also been low and show a downward trend. Among Governments, reporting rates dropped from around 40 per cent and 43 per cent in the first two rounds to 28 per cent in the third round, with data lacking particularly from the Africa region. By contrast, reporting compliance has been high or even universal under ILO Conventions C170 and C174, the Montreal Protocol and the IHR. Success factors could include: making reporting more useful for national contexts and efforts; close follow-up by, and provision of direct assistance through the Secretariats; and fostering transparency on reporting outcomes. Further efforts are needed to fully understand the reasons for significant divergences in reporting rates and to share lessons learned. [Part II, Ch. 2]

Table 5 Diverse indicators and reporting schemes under relevant international agreements and frameworks

Agreement / framework	Indicators and reporting schemes
2030 Agenda for Sustainable Development	Countries are invited to prepare Voluntary National Reviews, which are reviewed by the High-Level Political Forum. Custodian and partner agencies facilitate reporting on relevant SDGs.
Multilateral treaties	Under all relevant multilateral treaties, except the Rotterdam Convention, Parties are required to provide regular progress reports. These vary in frequency, scope, format and public availability.
Non-binding global policy instruments	Reporting schemes under non-binding global policy instruments have varying degree of formality, ranging from national reporting under the Code of Conduct to more ad-hoc review of implementation of the GHS.
Strategic Approach to International Chemicals Management (SAICM)	Reporting under SAICM is structured along 20 activity-based indicators grouped under the five Overarching Policy Strategy objectives. Reporting by stakeholders is voluntary and progress is reviewed by the ICCM.
Inter-Organization Programme for the Sound Management of Chemicals (IOMC) indicators	The IOMC developed a set of indicators to track progress in eight areas by analyzing data from verifiable sources and for which global data are available.



III. Advancing and sharing chemicals management tools and approaches: taking stock, looking into the future

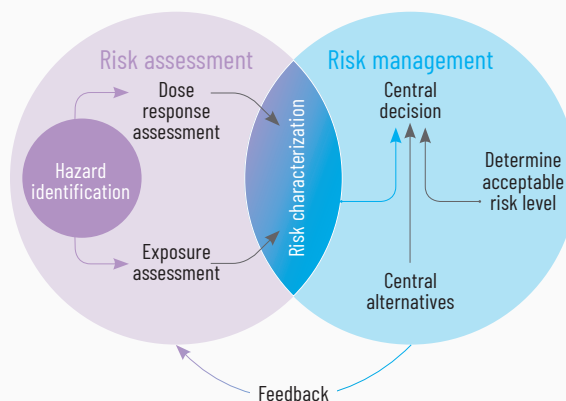
For many years, Governments, intergovernmental organizations, industry and other stakeholders have been developing and employing a range of science-based approaches, tools, methodologies and instruments to advance sound chemicals management and implement the 2020 goal. These approaches, and the related generation of new information, serve to identify chemical hazards, assess exposure and risks of chemicals, promulgate risk management decisions and actions when necessary, and assess alternatives. Collectively, they have contributed significantly to protecting human health and the environment. At the same time, concerns have been expressed that current approaches are at times complex and slow and do not result in the

progress needed. Over the past decades, valuable lessons have been learned in the practical application of these approaches, and opportunities have emerged to enhance their effectiveness, streamline their use, and employ them more systematically in all countries. Developing countries and economies in transition, in particular, stand to benefit from progress in these areas. [Part III]

Accelerating chemical hazard assessment and GHS classifications a priority

Significant progress has been made in identifying chemical hazards. Opportunities exist to share and use relevant methods and information more widely, given

Figure 17 Risk assessment and risk management decision process
(adapted from US National Library of Medicine 2018)



Dedicated chapters in the GCO-II discuss a number of steps in the risk assessment and risk management process, including progress made, lessons learned, and opportunities for enhancing effectiveness and knowledge-sharing. [Part III, Ch. 1-5]

that a chemical's hazard is an intrinsic property and is the same everywhere. The OECD Test Guidelines provide an internationally accepted framework to facilitate the mutual acceptance of data. Participation by additional countries in this scheme will generate further resource savings and reduce the need for animal testing. [Part III, Ch. 1]

However, data gaps remain in regard to fully understanding hazards and classifying all hazardous chemicals on the global market. For example, many dossiers submitted under the EU's REACH legislation do not meet the regulatory data and information requirements. Similarly, while hazard classification criteria have been developed through the GHS for many (albeit not all) end points, harmonized hazard classifications for individual chemicals have not been

achieved. Recent research has shown that the same chemical has been classified differently by different actors due to differences in data sets and interpretation of test results. Further efforts are therefore warranted to advance a global database of assessed and classified chemicals for information sharing and promoting harmonization of classifications. This would create efficiencies for all actors and benefit, in particular, countries with limited resources. [Part III, Ch. 1]

New hazard assessment approaches, such as the use of computer-based screening and grouping of chemicals, are promising developments, although further work is needed to fully replace animal testing. Beyond this, the sharing and mutual acceptance by countries or regions of hazard assessments, based on a globally agreed validation process, would create efficiencies. To facilitate knowledge sharing, mechanisms and platforms to share the growing knowledge about chemical hazards are advancing and provide valuable information, particularly for countries with limited resources. [Part III, Ch. 1]

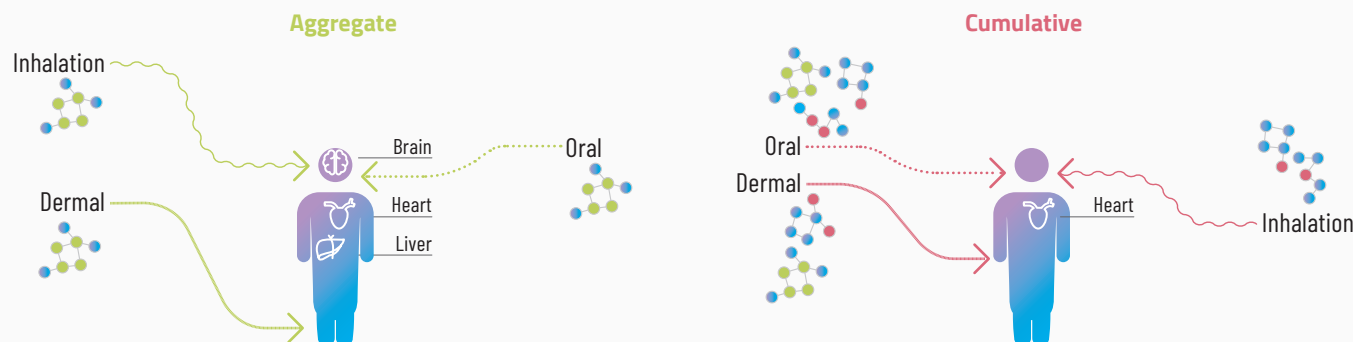
Exposure assessment is context-specific, but can benefit from international resources

While exposure assessments are context-specific (regional, national, local), international resources to support these assessments are available. For example, generic exposure scenarios are available through the OECD. They can help obtain insights into local human and environmental chemical exposure models to estimate specific releases and exposures. Similarly, modelling-based exposure assessment approaches are being advanced that enhance knowledge about



© UNITAR / Andrea Cararo,
Labelling of containers in a leather
chromium tanning factory

Figure 18 The concepts of aggregate and cumulative exposure
(adapted from US Environmental Protection Agency 2017b)



Aggregate exposure means exposure to the same substance from multiple sources and by multiple routes. Cumulative exposure means exposure to various chemicals and by multiple routes. [Part III, Ch. 2]

the distribution of chemicals in the environment and specific exposure situations. [Part III, Ch. 2]

However, further methodological work is needed to better understand the nature and magnitude of aggregate exposures across different sources of the same chemical, as well as cumulative exposures to various chemicals contained in one product and exposures resulting from various products. In this context, quantifying releases and exposures from chemicals in products, particularly in the indoor environment, has emerged as an important area for research. Progress in this area is often impeded by limited disclosure of chemical ingredients in products. [Part III, Ch. 2]

Refining chemical risk assessments methods to accelerate progress

A number of national, international and industry efforts have positively responded to the call of the WSSD in 2002 to advance chemical risk assessments. Legal and regulatory reform to accelerate chemical risk and safety assessment, have, for example, taken place in Australia, the EU, Canada, the Republic of South Korea and the US. In a number of countries, legislation has shifted the burden of proof from government to industry to show that – as is already the case for pesticides and pharmaceuticals in many countries – an industrial chemical is safe, rather than the regulator having to prove it has unreasonable risks. [Part III, Ch. 3]

The use of screening-level, generic risk-based approaches and grouping of chemicals with similar properties are all advancing as less complicated and more efficient chemical risk assessment approaches. To support efforts in countries with limited resources to undertake chemical risk assessments, various guidance tools are available, including for human health risks (WHO) and environmental risks (OECD). Other opportunities to improve or simplify risk assessment approaches include: [Part III, Ch. 3]

- › considering weight of evidence and undertaking systematic reviews;
- › defining clearly specific human and environmental protection goals;
- › improving risk assessment for chemical mixtures and cumulative exposures;
- › strengthening the integration of human health and environmental aspects in risk assessment;
- › better linking of risk assessment and risk management;
- › strengthening risk communication; and
- › advancing solution-oriented approaches in risk assessment.



Streamlining chemical risk management decision-making

While chemical risk management takes into account national and/or regional socio-economic considerations, common features of effective risk management are emerging internationally. For example, a necessary condition and first step for effective chemical risk management is to ensure that safety data sheets and chemical labels contain accurate and complete information, and that they are prepared according to the agreed GHS format. Proactive and pre-emptive risk management is particularly important in occupational settings, including in SMEs and the informal sector, which are of particular concern in developing countries and economies in transition. [Part III, Ch. 4]

Decision hierarchies are employed by risk managers in some cases, such as in occupational settings, for particularly hazardous chemicals, or in advancing risk minimization. These emphasize preventive management measures, such as substitution, taking into account the precautionary approach referred to in the 1992 Rio Declaration on Environment and Development and endorsed at WSSD in 2002. Similarly, in contexts where it is known that exposures are likely to be unacceptable (e.g. exposure of children to carcinogens through toys), regulators use science-based generic risk management decision-making to ensure adequate protection. Finally, socio-economic analysis in risk management that addresses both the costs of inaction and benefits of action is useful in decision-making. [Part III, Ch. 4, 6]

Box 7 Global knowledge-sharing and harmonization benefits all countries and saves resources

While opportunities exist to improve and further harmonize current approaches, there is great potential to share experiences and employ available chemical management tools and instruments more systematically, especially in countries with limited resources. Through a global capacity development and learning initiative, these tools and instruments could be shared more widely, including those featured in the IOMC Tool Box. All interested countries and stakeholders could be engaged to provide their context-specific experiences. For example, developing countries and economies in transition could benefit from the wealth of knowledge generated through hazard assessments undertaken and shared by more advanced countries, as well as by advancing their mutual acceptance. They could also benefit from information available through the use of generic exposure scenarios to obtain insights relevant in local exposure contexts without having to undertake full – and costly – exposure assessments themselves. [Part III]



Substitution with safer alternatives is becoming a driver for solutions and innovation

Momentum is growing to advance alternative assessment and informed substitution of chemicals of concern with safer chemical and non-chemical alternatives. Alternative assessment goes beyond conventional risk assessment and risk management, which tend to focus on reducing exposure to an acceptable level and evaluating “drop-in” replacements, often of the same chemical class and with the same hazard characteristics. Recent landmark regulations and policies promulgated in some countries or regions (e.g. the EU) include

provisions for substitution. These examples could be replicated. In addition, some multilateral treaties (such as the Montreal Protocol and the Stockholm Convention) have played a critical role in driving substitution for selected chemicals of concern. Non-regulatory drivers are also providing momentum, including sustainable chemistry strategies by frontrunner retailers or coalitions of actors in chemical-intensive industry sectors such as the textile sector. However, additional and broader policies are needed to shape substitution in a direction that catalyses broader innovations, rather than merely providing a tool for replacing individual chemicals. [Part III, Ch. 5]

Box 8 Replacing highly hazardous pesticides through integrated pest management and non-chemical alternatives

A number of countries have undertaken successful initiatives to reduce the use of highly hazardous pesticides by relying on integrated pest management, an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides, including through the use of non-chemical alternatives. One success story is Cuba, which introduced changes in the management of agro-ecosystems, including use of biological agents, cultural changes, and focused application of other pesticides to phase out endosulfan. Another example is Costa Rica, where use of one or more non-chemical alternatives combined with reduced-rate application of non-HHP fungicides was found to be a feasible and affordable strategy to maintain yields while reducing use of HHPs. [Part III, Ch. 5]



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Gardening with circular planting beds,
a typical feature of permaculture

Regrettable substitutions need to be avoided. These are substitutions which address risks of concern (e.g. toxicity to aquatic organisms) but cause other adverse impacts (e.g. are carcinogenic to humans). Regrettable substitution can be avoided through a functional approach which examines a range of chemical structures, technologies, product design options and non-chemical alternatives that are not restricted to finding another suitable chemical. Substitution with safer alternatives could be carried out in a stepwise process of incremental improvement, applying a number of solutions until the ultimate substitution has been achieved. [Part III, Ch. 5]

Recognizing the value of holistic sustainability assessment

Moving beyond human health and environmental aspects, life cycle assessment (LCA) tools help to foster a better understanding of broader sustainability considerations, covering all stages of the chemical and product life cycle, including social considerations. LCA approaches are increasingly used by companies to support sustainable supply chain risk management. They help avoid trade-offs, for example shifting the burden from one aspect of sustainability to another, from the present to the future, or from one stage of the life cycle

Table 6 Examples in the literature referring to regrettable substitution [Part III, Ch. 5]

Chemical of concern (function)	Hazard of chemical of concern	Substitute	Hazard of substitute
BPA (used in production of plastics)	Endocrine disruption	BPS, Bisphenol F	Endocrine activity
DEHP (plasticizer)	Endocrine disruption	Diisononyl phthalate	Carcinogenicity, possible endocrine disruption
Methylene chloride (solvent carrier in adhesives)	Acute toxicity, carcinogenicity	1-Bromopropane (nPB)	Carcinogenicity, neurotoxicity
Methylene chloride (brake cleaner)	Acute toxicity, carcinogenicity	n-Hexane	Neurotoxicity
Polybrominated diphenyl ethers (flame retardant)	Persistence, neurotoxicity, reproductive toxicity, carcinogenicity (penta and deca)	Tris (2,3-dibromopropyl) phosphate	Carcinogenicity, aquatic toxicity
Trichloroethene (metal degreasing)	Carcinogenicity	nPB	Neurotoxicity, carcinogenicity

to another. Relevant factors addressed include materials extraction; energy and water use during chemical synthesis and product manufacturing; the carbon footprint; chemicals' occurrence and behaviour in waste streams; and the prospects for recycling chemicals for renewed use. LCA approaches are therefore valuable in advancing sustainable materials management, non-toxic material flows and a circular economy. Choices about when and how to use these methods need to be made, taking into account available capacities and resources, supply chain requirements and the regulatory context, while avoiding "paralysis by analysis". [Part III, Ch. 7]

Using market-based instruments to advance substitution and innovation: getting the price right

Market-based instruments can help to correct negative externalities (i.e. unintended costs such as impairment of ecosystem services) that are caused by market failures and create incentives to reduce the use of undesired substances, fostering substitution and spurring innovation. A well-known example is the taxing of lead in gasoline, which has successfully encouraged a transformation to cleaner fuels. Examples of taxes to reduce the use of certain pesticides include one adopted in Mexico in 2013, based on the degree of acute toxicity, and a 2013 tax in Denmark based on environmental load. A number of other European countries have also implemented pesticide levies or taxes. [Part I, Ch. 8; Part IV, Ch. 6]

While the use of market-based instruments in advancing the management of hazardous chemicals and waste is still limited, it has the potential to increase. One option is to combine market-based instruments with command

and control regulatory measures (such as prohibitions or restrictions) to accelerate the phase-in of alternatives until a substance is prohibited. An indirect way of correcting market failures is the use of a Sustainability Framework by the International Finance Corporation of the World Bank Group. It includes performance standards that are applied to all investments and clients whose projects undergo a credit review process. Finally, a particular challenge exists in reforming market distorting subsidy programmes that create incentives to use chemicals, for example the use of fertilizers to boost agricultural production. [Part IV, Ch. 6]

Taking preventive risk management action: chemical accidents and natural disasters

Chemical accidents in facilities and related accidental releases of hazardous substances continue to cause a large number of human fatalities, adverse effects on the environment and high economic costs. Accidents in the chemical sector, whether at fixed establishments or during off-site activities, also continue regularly both in developed and developing countries. Chemical



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An aerial view of a large hole in the ground in the
aftermath of a huge explosion that rocked the
port city of Tianjin, China, 15 August 2015 CC BY 2.0

accidents can be caused by a range of technical and human factors, but also by natural disasters such as earthquakes, hurricanes, tsunamis, forest fires and floods, which may cause toxic chemicals to be widely disseminated in the environment and to mix with other hazardous substances. A number of these factors may be expected to increase in the light of climate change. International efforts are underway to facilitate a paradigm shift from managing chemical accidents to preventing them and integrating chemical accidents into broader emergency planning. To prevent future accidents, more systematic efforts are needed to raise awareness, strengthen oversight, share knowledge, and promote good practices. [Part I, Ch. 5, 7; Part III, Ch. 6]

Frontrunner private governance can drive risk management beyond compliance

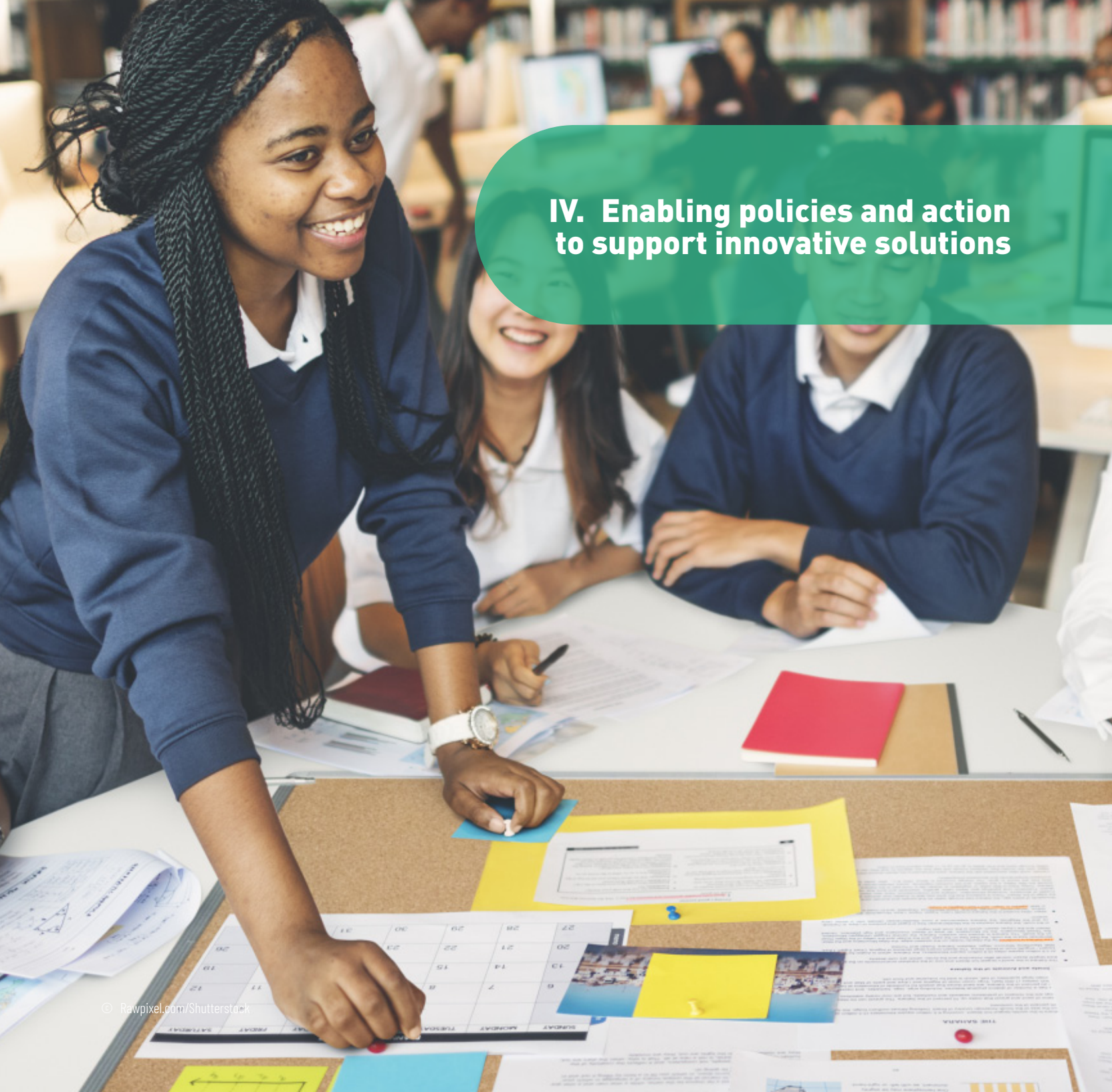
Concerted regulatory actions, non-regulatory strategies and voluntary industry initiatives beyond compliance may be mutually supportive. In many countries regulatory decision-making has stimulated companies to advance substitution, undertake sustainable innovations and

become frontrunners. Given the complexity of global supply chains, and considering the limited regulatory capacity in many countries, frontrunner private sector action is important to advance sustainability globally. [Part III, Ch. 4]

Frontrunner initiatives in the private sector across the supply chain of chemicals and products may also go beyond compliance and address safety gaps, and is particularly essential when regulatory structures in countries are weak, as in many developing countries. While frontrunner initiatives and private governance are advanced through various and often specialized fora, opportunities exist to give private governance a more prominent role within a future approach on chemicals and waste management beyond 2020. Discussion in a global setting could showcase innovative initiatives, while challenging frontrunner actors by providing feedback from stakeholders. Placing these initiatives in a global policy context could enhance their legitimacy and encourage other actors to join, gradually creating a vision for universal participation. [Part III, Ch. 4; Part V, Ch. 3]

Box 9 The Greenlist™ Programme of S.C. Johnson

S.C. Johnson is a formulator of chemical-intensive products that are used in millions of households every day. The company does not produce the ingredients that go into their products. In 2001, it launched an innovative chemical classification process called Greenlist™ that rates raw materials based on their impact on the environment and human health. Greenlist™ scores are reported alongside performance and cost information in the company's chemical formulary, so that chemists can choose materials in consideration of their environmental and health properties. Using the scores, materials can be easily compared. Over time, most suppliers have embraced the protocol. Today the programme has evolved to a point where suppliers are designing new chemicals based on its criteria and proposing their chemicals to S.C. Johnson on the basis of Greenlist™ scores. [Part III, Ch. 4]

A group of students in a library or classroom setting are working on a project. A young woman in the foreground, wearing a blue sweater and a white watch, is smiling and pointing at a calendar on a corkboard. Behind her, two other students, a woman and a man, are also smiling and looking at the project. The table is covered with various papers, including a calendar, a newspaper clipping, and a red notebook. The background shows bookshelves filled with books.

IV. Enabling policies and action to support innovative solutions

Advancing innovative solutions through enabling policies and action holds significant potential to reduce chemical pollution and exposures, thus complementing traditional action to achieve the sound management of chemicals and waste. Advancing a future chemistry that is fully sustainable requires the engagement of new actors and enabling policies and approaches, ranging from education reform, support for technology innovation and financing, to innovative business models, sustainable supply chain management and empowerment of citizens, consumers and workers through information and participation rights. [Part IV]

Imagining and shaping a future chemistry that is sustainable

A suite of innovations in chemistry have been developed, commercialized, or are on the horizon which illustrate the potential of chemistry to make a contribution to sustainable development. They range from chemistry processes that capture and transform carbon dioxide into new chemical feedstocks, to innovative building

materials (e.g. transparent wood or green concrete), to catalysis innovations replacing toxic organic solvents with water solvents in pharmaceutical production. Research across the disciplines of chemistry, biology and computer science is equally promising. The 2018 Nobel Prize in Chemistry, for example, was awarded for path-breaking research on how chemists produce new enzymes, leading to new pharmaceuticals and cancer treatments and less waste. Another promising development is the use of advanced software and supercomputers to design molecules and assess properties of chemicals, including their hazards. These developments have significant potential to advance the sound management of chemicals and waste and complement other measures to achieve sustainable production and consumption. [Part IV, Ch. 1]

Yet, no matter how promising, these innovations in chemistry may cause unintended and undesirable effects. A prominent example from the past is the pesticide DDT, which has helped to fight diseases such as malaria. DDT was recognized, only years after it

Box 10 Towards a common understanding of sustainable chemistry

While the concept of “green chemistry” is elaborated through the well-known 12 principles that focus on safer and less resource intensive chemistry, “sustainable chemistry” is evolving as a more holistic complementary concept. Spearheaded originally by the OECD, recent discussions (e.g. by UNEA, the US Government Accounting Office and the International Sustainable Chemistry Collaborative Centre) have expanded the sustainable chemistry concept in a direction where chemistry is contributing to sustainable development across its three dimensions. Given the interest of stakeholders around the world in having a better understanding of this concept, further international work may be valuable to develop practical guidance on sustainable chemistry which could be widely promoted alongside green chemistry principles. Together these concepts could inspire research, policymaking and private sector action compatible with, and in support of, the 2030 Agenda for Sustainable Development. [Part IV, Ch. 1]

began to be used, as a POP and probably carcinogenic to humans. It is therefore critical to screen chemistry innovations against the three dimensions of sustainable development and anticipate potential adverse impacts. Applying green and sustainable chemistry principles or considerations may be of value in driving innovation in the desired direction. [Part IV, Ch. 1]

Shifting mindsets through education in toxicology and green and sustainable chemistry

Ultimately, it will be chemists who need to come up with the inventions reaping the full potential of chemistry in supporting sustainable development. Scaling up chemistry research and innovation that integrates social,



Figure 19 Number of papers published concerning green chemistry education or sustainable chemistry education, 1998-July 2017 (adapted from Clarivate 2018)

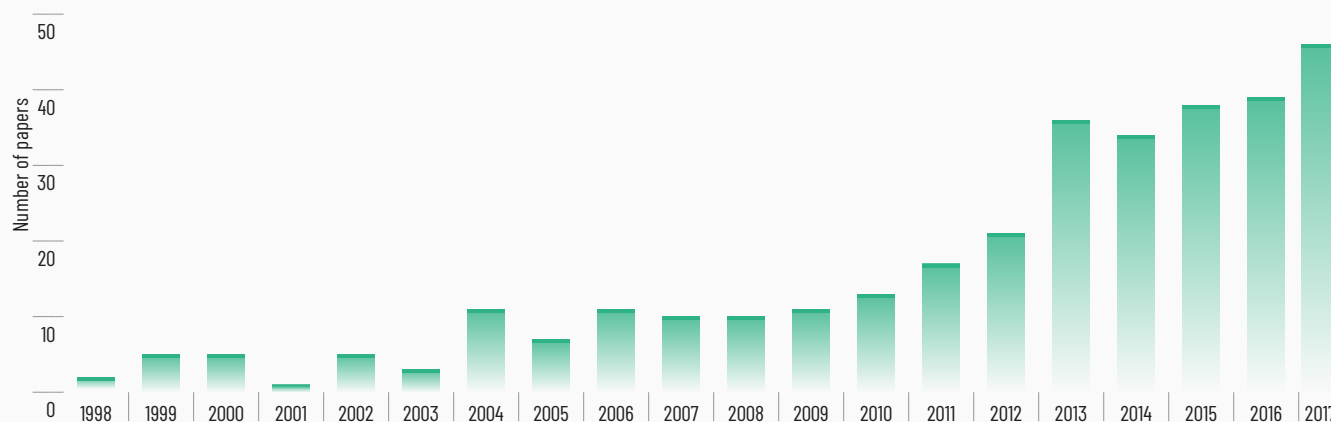
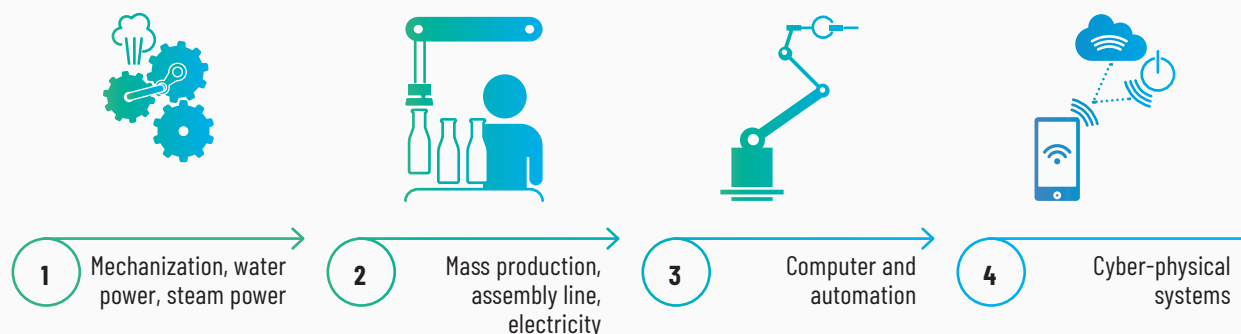


Figure 20 The four industrial revolutions (adapted from Cisco 2017)

The Fourth Industrial Revolution refers to a new era in the interface of industrial production, digitization and society which impacts a range of aspects of the chemical industry: how it innovates and produces; how it conducts business; how it engages with actors across supply and value chains; and its productivity and safety. While in the past there was a focus on the invention of new molecules, future innovations in chemistry, chemical safety and resource efficiency will likely be based on integrated solutions that are based on digital technologies. At the same time, digitization may also be associated with risks, such as possible cyberattacks. [Part IV, Ch. 1]

economic and environmental considerations requires the nurturing of a new generation of chemists. This can be achieved by integrating toxicology, green chemistry, sustainable chemistry and relevant topics of the 2030 Agenda for Sustainable Development in curricula at all levels, from primary education to tertiary education as well as professional education. [Part IV, Ch. 2]

To date, only a fraction of universities around the world have embraced green and sustainable chemistry education. The impact of these concepts in education is therefore still limited. However, green and sustainable chemistry is now taught in countries across all regions,

creating opportunities for south-south collaboration. For example, the Indian Ministry of Education is piloting a programme in which all chemists take a one-year course in green chemistry. Such efforts could serve as an inspiration to scale up efforts in other countries. To support these efforts, an increasing number of relevant green and sustainable chemistry tools and materials are available for use at primary, secondary, tertiary and professional levels. [Part IV, Ch. 2]

Further action at all levels is needed to disseminate best practices in green and sustainable chemistry education and overcome barriers in academia and the private

sector. Barriers to reform include professional and institutional resistance, professional conservatism, and lack of awareness among academic staff and policy-makers. Mainstreaming green and sustainable chemistry education therefore requires commitment and support from all stakeholder groups, including collaboration between academic institutions, chemical societies, Ministries of Education and the private sector. Existing national, regional and global networks can be used to disseminate best practices and exchange lessons learned. Building on existing initiatives, green and sustainable chemistry can be embedded as a critical element in wider efforts to integrate sustainability into education, such as the United Nations Educational, Scientific and Cultural Organization's initiative on sustainable education. [Part IV, Ch. 2]

Strengthening collaborative innovation for green and sustainable chemistry

Scaling up green and sustainable chemistry research and innovation is dependent on strengthening important elements of the innovation ecosystem. This ranges from a robust policy and regulatory framework driving innovation, to incentivizing research in chemistry that advances problem solving, to addressing sustainability challenges. Public research funding is particularly important during the early stages of the research and technology innovation process, including though blended financing mechanisms co-funded by the private sector. [Part IV, Ch. 3]

Box 11 Examples of green and sustainable chemistry start-ups

Start-ups play an important role in scaling up green and sustainable chemistry innovation across regions. Examples include the following:

- › The winners of the 2018 Elsevier Foundation Green and Sustainable Chemistry Challenge, which come from Nepal and Italy, developed novel approaches to sourcing guava leaves and fish bones in order to create new preservatives and fertilizers.
- › Entrepreneurs from Peru and Singapore use nanotechnology-empowered water purification filters.
- › A Kenyan start-up is providing alternative building materials and products made from recycled plastics.

[Part IV, Ch. 3]

Start-up initiatives and young entrepreneurs play an important role in benefiting from the full potential of sustainable chemistry. To achieve this potential, it is important to support start-ups through various measures, ranging from university-based technology innovation offices, to providing conducive environments for start-ups in incubators and accelerators, to integrating sustainable chemistry considerations into green bonds, including those covering climate change mitigation. [Part IV, Ch. 3]

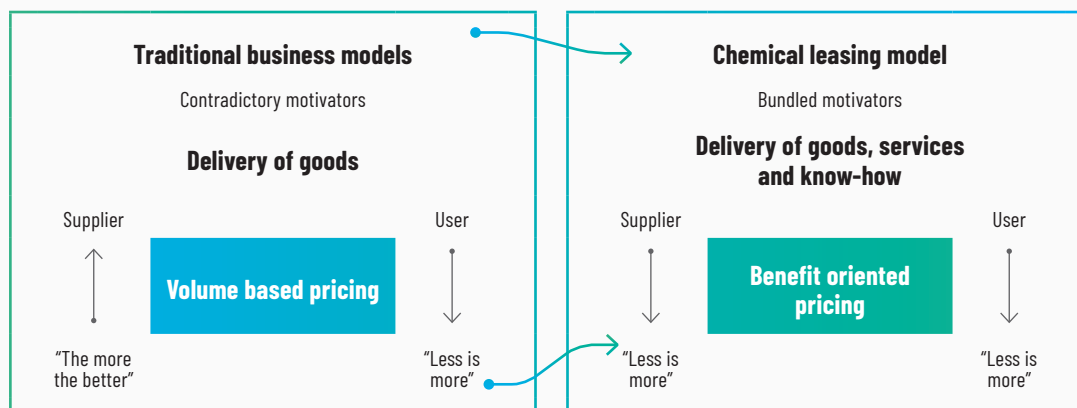
Collaborative innovation mechanisms have been shown to be effective in shaping research and innovation in a way that engages, and meets the needs of, a range of stakeholders. In designing new products in the textile

sector, for example, collaborative innovation may include the chemical industry, chemistry start-up companies, designers, potential end-users, research institutes, and potential investors. Governments can support these efforts by integrating green and sustainable chemistry considerations into enabling policies, subsidy schemes or technology programmes supporting innovation consortia. [Part IV, Ch. 3]

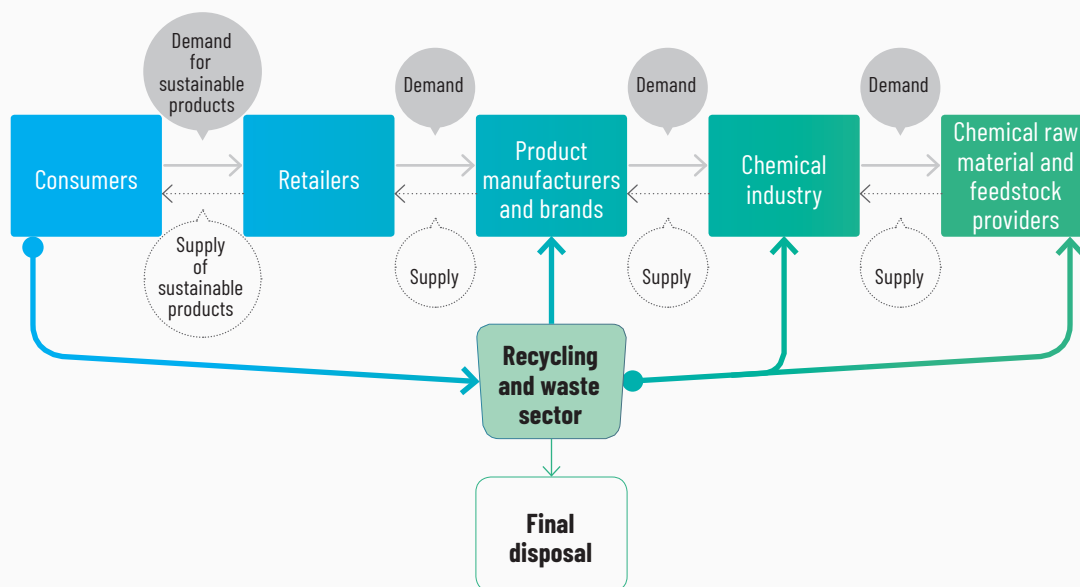
Sustainable business models create opportunities

In a fast-changing world new business models emerge rapidly, with direct or indirect implications for the chemical industry and the sound management of chemicals and waste. Business models with a strong

Figure 21 Traditional business models vs. chemical leasing (adapted from Abraham and Joas 2018, p. 398)



Chemical leasing refers to a business model whereby suppliers sell services (e.g. number of cars painted) rather than chemicals, creating incentives to minimize the use of chemicals and maximize resource efficiency.

Figure 22 Interface of demand and supply in driving the sustainability of chemicals in the supply chain

Consumers and retailer play an important role in driving demand for safer chemicals and products. Vice versa, green and sustainable chemistry innovations can drive the development of safer chemicals and products “downstream” in the value and supply chains. Both “pull” and “push” approaches are important and can complement each other.

focus on sustainability and circularity include green product- and process-based models, waste regeneration systems, efficiency optimization, management services and industrial symbiosis models. Of specific interest for the chemical industry are industrial parks, which provide common services (e.g. energy and waste management) to various production facilities, enhancing resource efficiency and environmental performance. Joining these parks may be valuable in particular for SMEs,

which could benefit from proximity to larger facilities. [Part IV, Ch. 4]

Chemical leasing (Figure 21) has been recognized as an effective service-oriented business model with the potential to advance sustainability within supply chains. Under this scheme, suppliers sell services (e.g. number of cars painted) rather than chemicals, which creates incentives to minimize the use of chemicals and

maximize resource efficiency. A successful example was implemented in Colombia, where the introduction of a chemical leasing scheme in the petroleum industry in the field of water treatment resulted in a 20 per cent reduction in chemical consumption, while at the same time reducing water treatment costs by 80 per cent. At the international level, the 2016 Declaration of Intent on Chemical Leasing has been signed by Austria, Germany and Switzerland, El Salvador, Sri Lanka and Serbia. Additional countries may consider joining. [Part IV, Ch. 4]

Scaling up effective corporate governance and sustainable supply chain management

A growing number of retailers, product manufacturers and chemical companies have included sustainability objectives, sustainable supply chain management (Figure 22) and extended producer responsibility in their corporate policies. Industry action to advance the transparent flow of relevant information on chemicals

and materials throughout the supply chain is also gaining momentum. Yet universal implementation of these initiatives has not been achieved. Relevant measures to be taken include: scaling up voluntary standard-setting beyond compliance; harmonizing chemical management protocols across industry sectors (e.g. on full material disclosure and labelling of products); using LCA tools, metrics and reporting to address the sustainability of products throughout their life cycle; and scaling up the design of safer and more sustainable products and production processes. Promoting the engagement of (and developing capacity in) the recycling sector is important, so that secondary raw materials going back into the circular economy are safe and sustainable. It is equally relevant to recognize the role of informal actors at various stages in the supply chain. Unless the measures described above (and others) are put in place, companies may face significant economic risks (Box 12). [Part IV, Ch. 4, 6-7]

Box 12 The benefits of thorough due diligence during mergers and acquisitions

Companies undertaking mergers and acquisitions in the chemical value chain stand to benefit from thorough due diligence that takes into account environmental and human health factors. Recent cases illustrate the risk of potential financial liabilities associated with mergers and acquisitions. A multinational consumer goods company, for example, had to pay significant fines in 2018, and set up a US dollars multi-million compensation fund, after it acquired a company whose humidifier sterilizing products were linked to lung disease cases and ca. 100 deaths. Similarly, multinational companies recently experienced heavy losses in stock values in the range of billions of US dollars, or had to pay significant compensation, following allegations of lack of diligence or unsound management practices. A comprehensive due diligence therefore helps to identify potential risks and to internalize potential costs associated with liabilities in the price of the acquisition. [Part I, Ch. 1]

Using metrics to track progress and increase accountability

The use of a variety of private sector metrics to assess the sustainability performance of companies and producers in the chemical industry and downstream sectors is gaining momentum for a range of reasons, including public demand. Examples in the chemical industry include reporting under Responsible Care® as well as by individual companies, such as Sumitomo Chemical Group. Self-assessment and reporting is also ongoing in downstream sectors, such as under the ZDHC initiative, where compliance rates are being made publicly available. Companies also choose to engage with external bodies, such as the Cradle to Cradle Product Standard and the Chemical Footprint Project. Furthermore, independent external assessments are undertaken, for example through the Mind the Store initiative. Investor interest in corporate sustainability performance is also growing. Under the Dow Jones

Sustainability Index, chemical suppliers and downstream companies are requested to provide information on the percentage of their products that contain certain hazardous substances. [Part IV, Ch. 7]

Stakeholders can take further steps to increase transparency and rigour, thereby ensuring metrics meet quality standards, are fit for purpose and audience, and address all dimension of sustainability. Sustainability reporting by all chemical and downstream industries could be scaled up using harmonized methods and indicators. Opportunities exist to further (and more comprehensively) integrate chemicals and waste issues into existing and widely used private sector metrics and reporting schemes (e.g. the Global Reporting Initiative). Private sector metrics and sustainability reporting could also become an important aspect of measuring progress in a beyond 2020 framework. Bringing together relevant stakeholders to advance a common understanding of metrics, including with respect to the sustainable

Box 13 The ToxFox application, a consumer product check for harmful substances (BUND 2018)

ToxFox is a smartphone app by Friends of the Earth Germany which provides information about endocrine-disrupting chemicals in cosmetics and allows users to submit Substances of Very High Concern (SVHC) inquiries. It has a continuously growing database, in which suppliers' responses are saved. Suppliers can also enter data about the SVHC content of their articles. The AskREACH mobile app, similar to the ToxFox app, is scheduled to be launched in April 2019. It will be available throughout Europe and may be adapted for use in each EU Member State. [Part IV, Ch. 8]



chemistry concept, would enhance transparency and credibility. [Part IV, Ch. 7]

Empowering workers, citizens and consumers: information and rights-based approaches

Providing enhanced access to robust information by workers, citizens and consumers, as well as fostering understanding thereof, is a prerequisite for ensuring effective public participation and informed decision-making and thus achieving the sound management of chemicals and waste. Protecting workers includes ensuring they have access to chemical hazard and safety information. Providing citizens and consumers with robust information on hazardous chemicals in products in line with the GHS allows them not only to protect themselves, but also to shape demand for safer and more sustainable products, relevant government policies, and action in the private sector.

New information tools, such as the smartphone apps ToxFox and AskReach (Box 13), are available to engage citizens in accessing, collecting, processing and sharing knowledge relevant for chemicals and waste, e.g. on high levels of occupational exposure. More efforts are needed to promote access to and understanding of this information, particularly in developing countries and economies in transition, including through campaigns and training programmes for workers. Access to information, public participation, and access to justice also allow citizens, consumers and workers to engage, e.g. by invoking the duties of states under relevant multilateral treaties, and to protect their own and future generations' rights to a healthy environment. [Part IV, Ch. 8]

Strengthening the interface of chemicals and waste management and human rights

The use of human rights-based approaches complements and provides a back-up to legislative and regulatory measures in ensuring protection and access to effective remedies. Under a number of international human rights instruments, countries have a duty to protect human rights and businesses have a responsibility to respect human rights, including those threatened by the presence of hazardous chemicals and waste. Every country has recognized one or more of the human rights that are directly or indirectly implicated by the management of chemicals and waste. For example, virtually every country has ratified the UN Convention on the Rights of the Child, which recognizes the right of the child to the highest attainable standard of health and requires that states shall take appropriate measures to combat disease and malnutrition, taking into consideration the dangers and risks of environmental pollution. [Part IV, Ch. 8]

Since 1995, the UN Commission on Human Rights and its successor, the UN Human Rights Council (HRC), have mandated a Special Rapporteur to report on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes. In 2011, the HRC affirmed “that the way hazardous substances and wastes are managed throughout their lifecycle, including manufacturing, distribution, use and final disposal, may have an adverse impact on the full enjoyment of human rights”. Protecting the rights of workers, citizens and consumers, including the right-to-know and the right to have access to justice, including effective remedies, is therefore

critical in protecting them and allowing them to seek remedies. [Part IV, Ch. 8]

Research recently undertaken within the mandate of the Special Rapporteur suggests that human rights violations and abuses caused by chemical pollution are still prevalent. In an August 2018 report to the HRC, the Special Rapporteur recommended that “States must ensure that legislation and other practices reflect their duty to respect, protect and fulfil human rights obligations implicated by hazardous substances and wastes [...] [and] that victims of the effects of hazardous substances and wastes have access to an effective remedy”, further noting that “the right to information is critical in the context of toxics”. A subsequent report in October 2018 explored opportunities to further integrate the human rights dimension of chemicals and waste into the beyond 2020 framework. [Part IV, Ch. 8]

Furthermore, in 2018 the Special Rapporteur proposed 15 principles to help Governments and businesses better protect human rights with respect to exposure to hazardous chemicals. They broadly cover the responsibilities and duties of businesses and Governments; worker access to information; and “remedies” to hold those who violate workers’ rights accountable. These principles are relevant to strengthening chemicals and waste management beyond 2020. Some companies, including in the chemical industry (e.g. BASF and Merck), have already committed to respect human rights along the lines of the UN’s Guiding Principles on Business and Human Rights. Other companies may consider following suit. [Part IV, Ch. 8]



V. Scaling up collaborative action under the 2030 Agenda for Sustainable Development

The period up to the conclusion of the intersessional process by 2020 provides a brief but critical window in which to develop a comprehensive global framework, featuring ambitious priorities and coherent indicators. This can be achieved by enhancing commitments by current stakeholders and increasing the

engagement of new actors. The 2030 Agenda presents a range of opportunities for scaling up collaborative action to achieve the sound management of chemicals and waste, including through the integration of chemicals and waste considerations into relevant sector policies and action plans. [Part V]

Figure 23 Linkages between chemicals and waste management and the Sustainable Development Goals
(based on IOMC 2018, p. 3)



The sound management of chemicals and waste can provide practical solutions to achieve a number of Sustainable Development Goals. [Introduction; Part V, Ch. 1-2]

Using the SDGs and targets to stimulate integrated action beyond 2020

The sound management of chemicals and waste cuts across the 17 SDGs. It is a crucial element underpinning the implementation of the 2030 Agenda, as chemicals and waste affect many aspects of development. This is reflected, directly or indirectly, in a number of goals and targets. Providing a global vision that brings together all countries and all stakeholders, the 2030 Agenda presents an opportunity for collaborative action at all levels to achieve the sound management of chemicals and waste. SDG Targets 12.4 and 3.9 are at the core of the sound management of chemicals and waste. Equally important, a number of SDGs and targets relevant for chemical-intensive sectors cannot be achieved without due consideration of the sound management of chemicals and waste, such as those concerning access to food, clean energy and safe housing. Furthermore, achieving a range of SDGs and targets is essential to establish an enabling environment for the sound management of chemicals and waste, including those concerning access to information, education and financing. [Introduction; Part V, Ch. 1-2]

The 2030 Agenda provides a renewed opportunity to mainstream chemicals and waste management in national development planning. Linkages exist with ending poverty (SDG 1); promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG 8); climate action (SDG 13); and others. Such linkages can facilitate the inclusion of chemicals and waste management considerations in national and sub-national budgeting and the allocation of national financial resources,

in line with the integrated approach to financing. Equally important is the integration of chemicals and waste management considerations in international development assistance and capacity building (SDG Targets 17.6 and 17.8). [Part V, Ch. 1-2]

Strengthening chemicals and waste management programmes

Although significant progress has already been made, major gaps remain with respect to implementation of the 2020 goal. SDG Targets 12.4 and 3.9 are at the core of the sound management of chemicals and waste, and are the drivers for developing and implementing effective and integrated systems and programmes for the sound management of chemicals and waste covering all stages of the life cycle. The development of basic legislation and institutional capacity, in line with the overall orientation and guidance and its 11 basic elements, have been recognized under SAICM as critical at the national and regional levels to the attainment of sound chemicals and waste management. The elements range from the establishment of legal frameworks that address the life cycle of chemicals and waste, to industry participation and defined responsibility across the life cycle, to the development and promotion of environmentally sound and safer alternatives, to mention only some. [Parts I-II; Part V, Ch. 2]

Integrating chemicals and waste in sector policies and actions

The 2030 Agenda provides a renewed opportunity to strengthen inter-ministerial coordination mechanisms and integrate chemicals and waste considerations into

Table 7 Integrating chemicals and waste management, and green and sustainable chemistry innovation, in relevant sectors: some opportunities [Part V, Ch. 2]

Sectors		SDG targets	Examples of opportunities for management and innovation
Agriculture and food		Target 2.4: sustainable food production	Scale up IPM and agro-ecological approaches, including development and use of non-chemical alternatives and other good agricultural practices
Health		Target 3.8: safe medicines and vaccines	Sound management of pharmaceuticals and disinfectants that contribute to antimicrobial resistance
Energy		Target 7.a: clean energy research and technologies	Improve technologies using resource-efficient, sustainable materials when decarbonizing the energy sector
Infrastructure		Target 9.1: sustainable infrastructures	Reduce raw material use and waste generation via advanced materials without creating future legacies
Industry		Target 9.2: sustainable industrialization	Ensure that chemical-intensive industries rely on best available techniques and best environmental practices
Housing		Target 11.1: safe housing	Reduce indoor air pollution through safer insulation and replace building materials of concern (e.g. asbestos)
Transport		Target 11.2: sustainable transport systems	Advance clean mobility, for example based on sustainable chemistry solutions for batteries
Tourism		Target 8.9: sustainable tourism	Adopt practices to reduce the chemical footprint of tourism services
Mining		Target 12.2: Sustainable use of natural resources	Ensure environmentally sound management of tailings
Labour		Target 8.8: safe working environments	Enhance risk assessment of chemicals of concern while promoting investment in green and sustainable chemistry to reduce hazardous occupational exposures
Education		Target 4.7: education for sustainable development	Mainstream green and sustainable chemistry into relevant curricula
Finance		Target 17.3: financial resources from multiple sources	Enhance use of green and sustainable chemistry metrics as criteria in investment

The list of opportunities, targets and sectors in this table is not exhaustive. Other relevant sectors include (but are not limited to) technology and innovation, trade, development cooperation, and justice.

relevant sectors, including enabling policies and actions, such as education (SDG Target 4.7), innovation (e.g. SDG Target 9.5) and financing (SDG Target 17.3). In developing effective sectoral policies and actions, relevant Ministries may benefit from considering linkages with relevant international agreements on chemicals and waste. The IOMC participating organizations can also play a valuable role in facilitating the development of sectoral strategies, as well as establishing and strengthening communication channels. [Part V, Ch. 2]

Concerned Ministries, working closely with respective policy communities, may consider initiating a structured approach which could include the following considerations, among others: [Part V, Ch. 2]

- › Identify industry sectors where chemicals and waste issues cause concern, including hot spots.
- › Engage concerned industry sectors, associations and groups to initiate a dialogue.
- › Ensure hazard and risk communication according to the GHS. Identify risk management approaches and opportunities for safer alternatives.
- › Consider sectoral policy reform and standards to encourage sustainable chemistry innovation.

A coherent and results-oriented global indicators and reporting framework is needed

The development of a framework for chemicals and waste beyond 2020 provides an opportunity to create linkages across all relevant agreements and initiatives related to chemicals and waste management. Of particular value would be a comprehensive framework bringing together and complementing chemicals and waste multilateral treaties and other relevant instruments and initiatives, without interfering in matters addressed through these specialized instruments. An overarching common vision, strategic goals (or strategic objectives), targets and indicators to achieve sound management of chemicals and waste could provide a common agenda, guiding actions towards a desirable future in line with the 2030 Agenda. Valuable lessons can be learned from the development of the Aichi Targets and the Strategic Plan for Biodiversity 2011-2020, which created an integrated and coherent international framework endorsed by all stakeholders in the biodiversity cluster. Private sector metrics and sustainability reporting could add further value and become an important aspect of measuring progress. [Part II, Ch. 2; Part IV, Ch. 7; Part V, Ch. 2]

Linked to national initiatives, reporting schemes can become simpler, country-driven and linked to global targets and milestones. Making reporting more meaningful could be achieved by using reporting data more systematically to monitor progress over time and across countries, identify best practices, and inform capacity-building measures. Useful examples include the WHO IHR model, reflecting progress with core capacities over time, and the Aichi Targets, which provide a reference point for developing National Biodiversity

Table 8 Example of a results chain to minimize adverse impacts [Part V, Ch. 2]

Activities	→	Outputs	→	Outcomes	→	Impact
› Develop GHS awareness-raising and capacity-building material › Prepare an implementation strategy for the GHS in key sectors	→	› GHS standards and regulation developed › Key stakeholders trained and have capacity to implement the GHS	→	› GHS labels and safety data sheets available at the workplace › Companies and workers take precautionary measures	→	› Reduced number of deaths and illnesses among workers and minimized impacts on the environment

Implementation of the GHS is a necessary but in many cases not sufficient measure for reducing the number of deaths and illnesses among workers and minimizing impacts on the environment.

Action Plans. Consolidating reporting mechanisms and data from various instruments, focusing on a limited number of indicators and making data available at the global level, as is done, for example, in the case of the Global Health Observatory, would help to ensure accountability, track progress, engage stakeholders and identify good practices. [Part II, Ch. 2; Part V, Ch. 2]

A coherent framework would benefit from distinguishing between outputs (e.g. adoption of legislation) and impacts (e.g. reduction of adverse impacts from hazardous chemicals), where possible using impact indicators as the ultimate benchmark to determine whether interventions are successful. Most indicators currently used to monitor progress under international chemicals and waste agreements are output-, activity- or instrument-based, making it difficult to assess progress in protecting human health and the environment from the adverse effects of chemicals and waste. In developing the framework, consideration also needs to

be given to impact-focused targets in the 2030 Agenda. Concerning activity and output indicators, work under SAICM could serve as a starting point. Table 8 provides an example of indicators distinguishing between activities, outputs, outcomes and impacts to illustrate such a results chain. Further thinking could explore a comprehensive framework at the national level, as well as the interface of such a framework with tracking of progress at the global level. [Part II, Ch. 2; Part V, Ch. 2]

Engaging key sectors and actors will be crucial in chemicals and waste management beyond 2020

The 2030 Agenda is built on the premise that sustainable development can only be achieved by bringing together all countries and stakeholders. SDG 17, calling on the global community to revitalize the global partnership for sustainable development, provides a framework for facilitating the engagement and ownership of actors

beyond the chemicals and waste community (including actors in key economic and enabling sectors), some of which have so far not been sufficiently engaged, both nationally and at the international level. [Part V, Ch. 1-3]

To advance ambitious and concerted commitment, a global framework to stimulate collaborative action for the sound management of chemicals and waste would need to create mechanisms and incentives to foster commitment, engagement and collaborative action of key actor groups, including: [Part V, Ch. 3]

- › **key economic and enabling sectors**, for example by developing national sectoral strategies in close collaboration with relevant Ministries, embedded in a global framework featuring overarching international sectoral strategies, e.g. with a yearly focus;
- › **companies, industry groups, and trade associations**, for example by creating a platform for frontrunner retailers and downstream manufacturers excelling through innovative action to showcase achievements and stimulate a race to the top;
- › **workers' organizations**, for example by promoting discussion and the exchange of good practices related to training and hazard identification, as well as on potential strategies towards the promotion of green jobs and decent work in the sector;
- › **civil society groups**, for example by reaching out to organizations active at the local, national, regional and global level that have not traditionally been engaged on chemicals and waste but can offer capacities and work on topics with strong linkages;

- › **the academic and research community**, for example by ensuring that concrete reward structures are in place for scientists to provide targeted and tailor-made input for chemicals and waste policy-making or by inviting scientists to speak at relevant fora more systematically;
- › **the donor, investor and financial community**, for example by exploring and communicating linkages of chemicals and waste with other priority topics of national and international donors (e.g. climate change and biodiversity) and by mobilizing new business angels and investors to consider green and sustainable chemistry in their investment criteria; and
- › **leaders in the media and the general public**, for example by providing journalists with key messages in simple language and of interest to a broad audience, or by implementing social media campaigns.

Results-based stakeholder action plans, roadmaps and accountability beyond 2020

To facilitate commitment, ownership, mutual accountability and collective tracking of progress to achieve the sound management of chemicals and waste, countries and all relevant stakeholders could develop, implement and share, internationally, results-based action plans and roadmaps to accelerate progress towards achieving the sound management of chemicals and waste. Within the framework of a beyond 2020 mechanism, action plans and roadmaps could be prepared in a collaborative manner by countries,

industry sectors (e.g. the chemical industry, chemical-intensive downstream sectors, retailers, the recycling industry), civil society organizations, the IOMC, academia and others. They could also be prepared at the thematic level and involve several stakeholders (e.g. for an initiative to fill data gaps to understand the hazard potential of chemicals). [Part V, Ch. 3]

Stakeholders could pledge and showcase their action plans and roadmaps within the beyond 2020 framework and benefit from the input of other stakeholders (which might take different forms, such as peer review). Pledges could be reviewed globally against agreed goals and targets, with adjustments made as appropriate. Collectively, these action plans and roadmaps would provide an indication of commitments and allow assessing the extent collaborative action

succeeds in making the needed progress to achieve the sound management of chemicals and waste. There are examples of road maps already prepared addressing the sound management of chemicals and waste management, or certain aspects of it, which could serve as a source of inspiration. Examples include the World Business Council for Sustainable Development Chemical Sector SDG Roadmap or the WHO Chemicals Road Map. This proposed “roadmap” approach would be compatible with, and also take into account experience gained in other international fora, such as climate change. Those have evolved to include a more flexible, yet results-oriented and mutually accountable approach to compile commitments and action taken, with international tracking of progress and adjusting of ambition, as appropriate. [Part V, Ch. 3]

Box 14 Strengthening engagement of scientists and the science-policy interface

Opportunities exist to provide better and more coherent scientific information for policy-making. This can be achieved, for example, by taking steps towards cost-effective harmonization of data generation and collection, and respective research protocols (e.g. on releases and biomonitoring), strengthening monitoring and surveillance capacities (including those of medical professionals), and sharing data more systematically at all levels. Industry has a critical role and responsibility in regard to generating and disseminating relevant data. Further approaches and mechanisms could be developed to strengthen two-way communication, support collaboration between the scientific community and policy-makers, and develop a problem-solving oriented research agenda and protocols on priority topics.

Stakeholders could find value in further exploring methodologies that facilitate more systematic and science-based identification of future priorities at the international level, for example by using information on health and environmental impacts and harm caused, and by drawing on information from risk assessments. Improved science-policy interaction can also help identify issues early on; set priorities; and determine the corresponding specific and measurable targets that guide their implementation. [Part I, Ch. 1, 5-9; Part II, Ch. 1, 3-4; Part III, Ch. 2-3; Part V, Ch. 3]

Annex:

actions up to and beyond 2020 identified through the GCO-II

As a contribution to strengthening the implementation of the sound management of chemicals and waste and minimizing their adverse impacts, the GCO-II identified the following actions, grouped under ten topics. They were derived based on a review of the implementation of the 2020 goal to date, and responding to the UNEA mandate to provide options for implementation of actions to reach relevant SDGs and targets up to and beyond 2020.



1. Develop effective management systems

Address prevailing capacity gaps across countries, strengthen national and regional legislation using a life cycle approach, and further strengthen institutions and programmes by:

- › promulgating, aligning and enforcing legislation and policies, including full implementation of the GHS, promulgating legislation for industrial and consumer products, and taking measure to address illegal international traffic; and
- › integrating chemicals and waste considerations into national and sectoral policies (e.g. agriculture, housing, transport and energy) to implement specific SDG targets.

Main actors: *Governments, IOMC, international and regional economic integration organizations*

Relevant chapters include: Part II, Ch. 3, 6; Part III, Ch. 1; Part V, Ch. 2

2. Mobilize resources

Scale up adequate resources and innovative financing for effective legislation, implementation and enforcement, particularly in developing countries and economies in transition, by:



- › scaling up efforts to integrate chemicals and waste management into national and sectoral budgets;
- › facilitating adequate external technical assistance, financial support and technology transfer to address issues causing greatest harm, including through new and innovative financing (e.g. fiscal incentives, cost recovery instruments, green bonds, venture capital); and
- › strengthening the integrated approach to financing through assessing its effectiveness and renewed commitment across all three components (mainstreaming, industry involvement, and dedicated external financing).

Main actors: *Governments, the private sector, civil society, the financial sector and investors*

Relevant chapters include: Part II, Ch. 3, 6; Part IV, Ch. 3, 5; Part V, Ch. 2

3. Assess and communicate hazards

Fill global data and knowledge gaps, and enhance international collaboration to advance chemical hazard assessments, classifications and communication by:



- › sharing existing hazard data and assessments globally, and increasing the mutual acceptance of testing data and hazard assessments across countries based on accepted methods and scientific criteria;
- › developing a global database of assessed and classified chemicals for information-sharing and promoting harmonization of classifications; and
- › setting targets to fill data gaps to fully understand globally the hazards of substances in commerce, and assessing progress.

Main actors: *Governments, the private sector, IOMC, international and regional organizations, academia*

Relevant chapters include: Part II, Ch. 3, 6 Part III, Ch. 2

4. Assess and manage risks

Refine and share chemical risk assessment and risk management approaches globally to promote safe and sustainable use of chemicals and address emerging issues throughout the life cycle by:



- › sharing knowledge on existing risk assessment and management approaches and tools (e.g. exposure scenarios) more widely;
- › further developing and refining exposure, risk assessment and LCA methods; and
- › taking into account and benefiting from opportunities for accelerated and effective risk management, such as placing the burden of proof on producers, advancing informed and non-regrettable substitution of chemicals of high concern, and using generic risk-based approaches, when possible.

Main actors: *National and regional agencies, IOMC, academia, the private sector*

Relevant chapters include: Part II, Ch. 3-6; Part III, Ch. 1-7

5. Use life cycle approaches

Advance widespread implementation of sustainable supply chain management, full material disclosure, transparency and sustainable product design by:



- › promoting wide implementation of corporate sustainability and sustainable procurement policies;
- › developing harmonized approaches across sectors to share chemical information and to advance full material disclosure across supply chains, including chemical-intensive industry sectors and the recycling/waste sector;
- › strengthening collaboration by all actors in the supply chain in designing and using safer chemicals and sustainable products; and
- › promoting the integration of chemicals and waste considerations into corporate sustainability metrics and reporting.

Main actors: *The private sector, Governments, IOMC, international organizations*

Relevant chapters include: Part I, Ch. 4; Part II, Ch. 4; Part IV, Ch. 6-7

6. Strengthen corporate governance

Enable and strengthen chemicals and waste management aspects of corporate sustainability policies, sustainable business models, and reporting by:

- › encouraging private sector frontrunner action to further develop voluntary standards that exceed basic compliance, and reviewing their effectiveness through interested stakeholders;
- › promoting sustainable business models, such as chemical leasing and eco-industrial parks; and
- › enhancing systematic use by investors of corporate sustainability and chemical footprint reporting, covering chemicals and waste management performance.

Main actors: The private sector, Governments, international organizations, the financial sector and investors

Relevant chapters include: Part II, Ch. 3-4, 6; Part III, Ch. 4; Part IV, Ch. 4, 7



7. Educate and innovate

Integrate green and sustainable chemistry in education, research, and innovation policies and programs by:

- › reforming chemistry curricula in tertiary, secondary, primary and professional education;
- › scaling up research initiatives, and technology innovation policies and programmes, that advance green and sustainable chemistry, particularly for start-up companies; and
- › facilitating a better global understanding of green and sustainable chemistry concepts.

Main actors: Governments, academia, international organizations, green and sustainable chemistry networks, the financial sector and investors, civil society, the private sector

Relevant chapters include: Part IV, Ch. 1-3



8. Foster transparency

Empower workers, consumers and citizens to protect themselves and the environment by:

- › disclosing robust and understandable information about hazardous chemicals in the supply chain to workers, consumers, citizens and communities;
- › scaling up innovative programmes and technology applications to facilitate a better understanding by individuals of chemical and waste risks, and engaging citizens in data collection through citizen science;
- › promoting and supporting meaningful and active participation by all actors of civil society, particularly women, workers and indigenous communities, in regulatory and other decision-making processes that relate to chemical safety; and
- › taking action so that citizens have ready access to justice.



Main actors: *Governments, the private sector, civil society, citizens, workers, consumers*

Relevant chapters include: Part I, Ch. 4; Part II, Ch. 4; Part III, Ch. 1, 6; Part IV, Ch. 8

9. Bring knowledge to decision-makers

Strengthen the science-policy interface and use of science in monitoring progress, priority setting (e.g. for emerging issues), and policy making throughout the life cycle of chemicals and waste by:

- › taking steps to harmonize scientific research protocols (e.g. for biomonitoring);
- › developing science-based criteria to identify emerging issues at the international level, taking into account harm (e.g. using health impact information) and monitoring their implementation;
- › providing research funding to fill identified gaps and priorities;
- › developing a study on the global costs of inaction, and benefits of action, on chemicals and waste management, comparable to the Stern Review on the Economics of Climate Change; and
- › developing and improving institutional mechanisms to improve knowledge generation and management.



Main actors: *Governments, academia, IOMC, international organizations*

Relevant chapters include: Part I, Ch. 1-8; Part II, Ch. 3, 6

10. Enhance global commitment

Establish an ambitious and comprehensive global framework for chemicals and waste beyond 2020, scale up collaborative action, and track progress by:

- › developing an aspirational, overarching and widely owned global framework that encourages engagement by all relevant stakeholders; developing global targets, milestones and indicators that distinguish between outputs and impacts;
- › providing opportunities for sharing internationally, and for input or peer reviews, action plans and roadmaps by stakeholders under a beyond 2020 framework;
- › considering how corporate sustainability metrics and reporting can play a stronger role in measuring progress in a beyond 2020 framework; and
- › monitoring, tracking and reviewing collective action and progress and making adjustments in regard to ambition, as needed.

Main actors: *All stakeholders participating in the intersessional process on beyond 2020*

Relevant chapters include: Part II, Ch. 2; Part IV, Ch. 7; Part V, Ch. 1-3



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**Progress towards the achievement of the 2020 goal of the sound
chemicals management: Emerging policy issues and other issues
of concern**

Submission of UN Environment and the World Health Organization: The promotion of lead paint laws and enhanced actions towards 2020

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the United Nations Environment Programme and the World Health Organization that supports the promotion of lead paint laws and enhanced actions towards 2020. The report is presented in the annex as received and has not been edited by the secretariat.

*SAICM/ OEWG.3/1

Annex

Submission of UN Environment and the World Health Organization: The promotion of lead paint laws and enhanced actions towards 2020

A. Background

Lead paint is a major source of childhood lead exposure, for example via contaminated dust in homes that can be inhaled or ingested¹. Even relatively low levels of exposure to lead can cause serious and irreversible neurological damage, there is no known level of lead exposure without harmful effects. The cost of removing existing decorative lead paint from surfaces in homes, schools, and other buildings is significant. By contrast, the economic cost for eliminating the use of lead compounds in new decorative paints is low and alternatives to lead additives are available for all types of paints. Many manufacturers have successfully reformulated their paint products to avoid the intentional addition of lead. However, the continued use of lead paint around the world remains a significant source of human exposure.

In 2009, the International Conference on Chemicals Management adopted lead in paint as an emerging policy issue and mandated the establishment of the Global Alliance to Eliminate Lead Paint (short name: The Lead Paint Alliance). Led by UN Environment and the World Health Organization, the Lead Paint Alliance goal is to eliminate lead paint in all countries by 2020². The global target to eliminate lead paint by 2020 was reaffirmed at the Third and Fourth Sessions of the International Conference on Chemicals Management. While considerable action has been taken, the elimination of lead in paint and the introduction of safe alternatives to lead pigments in paints remains a challenge in many countries.

B. Current Status

The momentum to reduce the use of lead in paints resulted in a number of countries adopting legislation in recent years. The SAICM independent evaluation states that the progress made in taking forward the “Lead in Paint” agenda has been particularly successful. As of September 2018, 71 countries confirmed that they have legally binding controls on lead in paint; however, in 122 countries, no binding limits were found. Even in countries with adequate regulations, weak enforcement resulted in continued manufacture and sale³. Despite significant progress and successful engagement of stakeholders, including through the Lead Paint Alliance, challenges remain, in particular in developing countries. These include a lack of country-specific data, laboratory capacity, public awareness on lead toxicity, and knowledge on alternatives⁴.

1 (UNEP 2010).

2 (UNEP and WHO 2012).

3 Kessler 2014; Gottesfeld 2015; IPEN 2016

4 (UN Environment 2017a, IPEN 2017; Kessler 2014).

Table 1. Countries with Confirmed Lead Paint Laws in Each UN Environment Region as of September 2018⁵

Africa	Asia and the Pacific	West Asia	Europe			Latin America and the Caribbean	North America
Algeria Cameroon* Ethiopia* [^] Kenya South Africa United Republic of Tanzania	Australia China India Nepal New Zealand Philippines Sri Lanka Thailand	Jordan Iraq* Oman	Armenia Austria Belarus Belgium Bulgaria Croatia Cyprus Czech Republic Denmark Estonia Finland France Germany Greece Hungary Iceland Ireland Italy	Kazakhstan* Kyrgyzstan Latvia Liechtenstein Lithuania Luxembourg Malta Monaco Montenegro Netherlands Norway Poland Portugal Romania Russian Federation Serbia Slovakia	Slovenia Spain Sweden Switzerland The Former Yugoslav Republic of Macedonia United Kingdom	Argentina Brazil Chile Costa Rica Cuba Dominica Guyana Mexico Panama Trinidad and Tobago Uruguay	Canada United States

*New since 1 October, 2017

[^]The law has been passed, but it has not been put into force

+Status change in WHO database

C. SAICM GEF Project

The Global Environment Facility has approved a 9 million USD project titled, ‘Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM)’. The aim of this global project is to accelerate progress and measure the adoption of national activities on emerging policy issues to achieve the SAICM 2020 goal and support planning for chemical management in the 2030 Agenda for Sustainable Development.

The project will be implemented in over 40 countries over a 4-year period and aims to present early project results at ICCM5 in 2020. The UN Environment GEF unit is the implementing agency and the SAICM Secretariat is the executing agency. The project focuses on three work components: lead in paint, chemicals in products, and strategic planning and knowledge management.

The Lead in Paint component promotes regulatory and voluntary action by government and industry to phase out lead in paint⁶. The project outcome is for at least 40 countries to legislate and implement legislation on lead paint; and for at least 35 small and medium paint manufacturing enterprises in seven countries to phase out lead from their production processes. Through nationally focused interventions, project activities will work with small and medium enterprises to demonstrate the replacement of lead additives in paint with non-lead alternatives using a technical guidance on paint reformulation developed in the context of the project. Experiences will be shared across subregions. Through regional approaches, targeted technical assistance will be provided to countries interested to take part in the project, to promote policy and advocacy towards phasing out lead in paint. Through a globally coordinated approach with governments and other relevant stakeholders, the project will accelerate the adoption of legal limits for lead in paint.

For the project countries selection process, countries without lead paint laws⁷ were selected based on the following criteria⁸:

- Growing national concerns (participated in International Lead Paint Prevention Week (ILPPW), voluntary commitment at UNEA 3, Lead Paint Alliance partner or member of

⁵ United Nations Environment Programme, *Update on the Global Status of Legal Limits on Lead Paint: September 2018*

⁶ The concentration limit recommended in UN Environment’s “Model Law and Guidance for Regulating Lead Paint” is 90 ppm total lead.

⁷ Lead paint law is defined as legislation, regulations, or mandatory standards, provided the law has enforcement provisions and penalties for non-compliance.

⁸ Baseline of the information used is from the WHO database and a related desk study.

the Lead Paint Alliance advisory group, previous webinar participation, ECOWAS ministerial endorsement, engagement by partners or regional grouping;

- Initiated work (lead paint data available, previous or upcoming workshop participation, previous project participation);
- Law assessment / first steps towards regulation (law review, gap analysis conducted, lead-related legislation such as in toys, voluntary standard in process or in place);
- Non-protective legislation (non-protective limit or partial legislation in place);
- Lead paint legislation in process or being drafted.

Based on the selection criteria above, countries without lead paint laws have been invited to participate in the project via letters sent to country Ministers of Health and Ministers of Environment, respectively. Countries that have expressed interest in participating in the project have been (or will be depending on the timing set out in part D below) invited to their relevant regional workshop to engage in the project.

D. Lead Paint Workshops under the SAICM GEF project

Lead Paint regional workshops will be organized by the UN Environment Chemicals and Health Branch and Regional Offices in collaboration with the World Health Organization as part of the project.

The regional workshops aim to:

- i. Provide participants with an understanding of why the elimination of lead paint is important and an overview of the SAICM GEF Project Lead in Paint Component.
- ii. Brief participants on the elements of a strategy to eliminate lead paint.
- iii. Enable participants to exchange ideas, experiences and best practice toward lead paint elimination.
- iv. Identify the next steps toward lead paint elimination, tailored to the national context, and to confirm willingness to join the project.

Participants for the regional workshops include:

- i. Two nominated focal points per country (from the Ministry of Environment, Ministry of Health or any other relevant Ministry);
- ii. One civil society representative per country;
- iii. Country or regional industry representatives.

The workshop dates are:

- **CEE regional workshop**
19-20 March 2019, Almaty, Kazakhstan
- **LAC regional workshop**
14-15 May 2019, Panama City, Panama
- **Africa regional workshop**
28-29 May 2019, Abijan, Côte d'Ivoire
- **Asia Pacific regional workshop**
12-13 June 2019, Bangkok, Thailand

At the end of the regional workshops, a country approach to eliminate lead in paint will be elaborated by the participants.

In parallel, small and medium enterprises (SMEs) will be selected in Peru, Ecuador, Colombia, Jordan and China for an industrial pilot test on paint reformulation, using the technical guidelines developed by the National Cleaner Production Center in Serbia. Launching workshops will be organized as part of the project, which will also support the global policy and advocacy effort to adopt lead paint laws.

E. Looking Ahead

- Urgent action is to be taken by governments, industry and civil society to accelerate international momentum to promote legally-binding controls on lead in paint in all countries.
 - Lead paint is a flagship programme of SAICM. OEWG3 is an opportunity for countries and regions to state their intentions to establish lead in paint legislation and share impact results at ICCM5 in 2020.
 - The Global Alliance to Eliminate Lead Paint online toolkit for establishing laws to eliminate lead paint, publications and other useful information can be found at the following link: <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/global-alliance-eliminate-lead-paint>.
 - We invite all governments to adopt lead paint laws. For further information, please contact lead-cadmium.chemicals@unep.org and/or noleadpaint@who.int .
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**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

A submission by the International Panel on Chemical Pollution - Strengthening the Science-Policy Interface in International Chemicals Governance

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the Summary Document from the “Multi-Stakeholder Workshop on Strengthening the Science-Policy Interface in International Chemicals Governance” and the Mapping and Gap Analysis conducted by the International Panel on Chemical Pollution (IPCP) in supporting the on-going discussions regarding strengthening the science-policy interface in the chemicals and waste cluster. The report is presented in the annex as received from the International Panel on Chemical Pollution and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex:

The International Panel on Chemical Pollution has submitted the following documents for the information of the Open-ended Working Group:

- I. Summary Document from the “Multi-Stakeholder Workshop on Strengthening the Science-Policy Interface in International Chemicals Governance” that was held in Geneva, Switzerland on 15-16 November, 2018. It reflects experts’ views on 1) needs for a strong, two-way science-policy interface, 2) understanding the current interface, 3) possible functions of a strengthened interface, 4) specifics to be considered in the design of a strengthened interface, and 5) institutional arrangements.
- II. A Mapping and Gap Analysis conducted by the International Panel on Chemical Pollution (IPCP) between July 2018 and January 2019. The Analysis first outlines desirable objectives and functions of a strong, two-way science-policy interface identified by a group of international experts. In a second step, it maps the existing science-policy interface bodies in the chemicals and waste cluster and identifies current gaps based on the outlined desirable objectives and functions, including 1) limited two-way communication between science and policy, 2) narrow range of objectives and functions by existing bodies, 3) limited effective participation from developing and transition countries due to a lack of time, resources, and expertise, 4) limited alignment of communication and coordination among existing bodies. Then, it draws on lessons learned from existing science-policy interfaces in other clusters, including 1) their positive impacts, 2) factors contributing to their effectiveness, and 3) limitations and challenges. Building on the analysis, the authors further explore possible options for strengthening the interface, inter alia:
 - An intergovernmental mechanism modelled upon the IPCC and IPBES;
 - A “network of networks” to connect existing interface bodies and beyond;
 - Expanding activities of the IOMC organizations.



MULTI-STAKEHOLDER WORKSHOP ON STRENGTHENING THE SCIENCE-POLICY INTERFACE IN INTERNATIONAL CHEMICALS GOVERNANCE: SUMMARY



December 2018

A workshop was convened by the International Panel on Chemical Pollution (IPCP)¹ in Geneva, Switzerland on 15-16 November, 2018 with the participation of experts from 10 intergovernmental organizations, 14 national and regional governments, and 6 international non-governmental organizations representing academia, the chemical industry and civil society. The workshop aimed to support the ongoing dialogue on strengthening the current science-policy interface in international chemicals governance² by reviewing the status quo, identifying gaps, and discussing needs and possible actions. This document reflects a collection of the views shared during the workshop. These views represent of the participants and not necessarily the views or official policies of their organizations and/or governments.

1. Background of the workshop

The workshop is a part of an ongoing initiative by the IPCP to help inform policy-makers and interested stakeholders regarding the strengthening of the science-policy interface in international chemicals governance, particularly within the context of the Intersessional Process under SAICM and the sound management of chemicals and waste beyond 2020. This initiative is financed through the IPCP's own funds, in-kind contributions from its members, and financial support from the Swiss Federal Office for the Environment (FOEN).

Building on previous participation in the Intersessional Process³, the IPCP has prepared a mapping and gap analysis that aims to help inform policy-makers and interested stakeholders on key questions including:

- What are the desired objectives and functions of a strengthened two-way science-policy interface in international chemicals governance?
- How are these objectives and functions fulfilled by existing science-policy interface bodies, and what are the major gaps?

1 The IPCP is a global network of academic scientists working on issues related to chemical pollution and was established in 2008. For more information on the mandate and membership of the organization, see: <https://www.ipcp.ch>.

2 Although waste governance is not explicitly mentioned here, it is considered as a part of a comprehensive chemicals governance framework, which includes the end-of-life stage of chemicals and associated products.

3 The IPCP's input in response to the co-chairs' summary of discussions at the first meeting of the Intersessional Process: <http://www.saicm.org/Portals/12/Documents/IP-consultation/Jul-Sep-2017/IPCP.pdf>

The IPCP's thought starter on a possible model for the science-policy interface under the Post 2020 Framework was submitted during the second meeting of the Intersessional Process: http://www.saicm.org/Portals/12/documents/meetings/IP2/A%20Thought%20%20Starter%20on%20a%20Possible%20Model%20for%20the%20Science_draft_15March2018_updated.pdf

- What are options for a way forward to strengthen the science-policy interface?

To seek stakeholders' feedback and input for finalizing a mapping and gap analysis, the workshop was organized by the IPCP. Prior to the workshop, a first draft of the mapping and gap analysis as well as a "Thought Starter on Options for a Way Forward" were prepared by the IPCP and shared with the participants as background documents to help guide the discussion at the workshop. In addition to the present workshop summary document, comments and information received from the experts during and after the workshop were reviewed for incorporation into the final version of the mapping and gap analysis⁴.

2. Needs for a strong, two-way science-policy interface

Participants highlighted the importance of a strong, two-way (science-to-policy and policy-to-science) interface⁵. In addition, some participants pointed out benefits of such an interface, including the following aspects:

- 1) providing rigorous, authoritative assessments that collect, digest and process fragmented pieces of scientific information on specific issues into a comprehensive, yet easily accessible format for policy-makers. These assessments should help to reduce the complexity and ambiguity of such scientific information for non-experts and to raise policy-makers' confidence and trust in using such scientific evidence;
- 2) raising awareness of chemicals and waste issues among policy-makers and the general public, possibly using the IPCC⁶ in the area of climate change as a role model;
- 3) increasing governmental ownership and stakeholder buy-in of final products (e.g. scientific assessments) through early involvement in the development process;
- 4) enabling scientists to better understand and be confident in their roles, to be aware of opportunities to be involved, and to understand the specific needs, languages and dynamics (e.g. timelines and key actors) to participate more effectively in policy processes;

4 The mapping and gap analysis: <https://www.ipcp.ch/wp-content/uploads/2019/02/IPCP-Sci-Pol-Report2019.pdf>

5 The science-policy interface is a space of interactions between scientists and policy-makers to enhance science-based policy/decision-making and is facilitated by interface bodies and individuals through science-policy interactions. A two-way science-policy interface includes not only interactions to transmit scientific knowledge and needs to the wider policy community, but also interactions to transmit policy knowledge and needs to the wider scientific community.

6 IPCC - Intergovernmental Panel on Climate Change (<https://www.ipcc.ch>), an official entity with multi-governmental backing and funding with a long track record.

- 5) providing a reference point for stakeholders/governments to look for specific information and keeping them up-to-date with the rapidly developing, often cross-cutting chemical landscape in a timely manner;
- 6) raising the profile of and demand for related disciplines at universities to create incentives for scientists to participate in policy processes in addition to their research work and to keep these disciplines attractive for future generations of students; and
- 7) providing scientific consensus on certain issues, while ensuring that the work toward consensus does not preclude timely action on chemicals issues.

3. Understanding the current science-policy interface

Participants noted the contributions by, and importance of, various existing interface bodies on the global, cross-regional, regional, national and local levels at the science-policy interface. They also shared their perspectives on existing challenges and opportunities within the current science-policy interface, which included the following:

- 1) insufficient scientific information or insufficient access to scientific information on certain issues, especially emerging policy issues;
- 2) challenges in communication between scientists and policy-makers due to a difference in scientific and policy languages:
 - a. scientific information is often not in a form that policy-makers can directly use;
 - b. scientists are often not aware of policy needs due to a lack of information about policy-relevant processes, a lack of fora available to scientists, as well as a lack of direct communication and outreach to scientists;
- 3) specifically related to developing countries, countries with economies in transition, and the poor in all countries:
 - a. a lack of capacity-building to support scientists in understanding how to be involved in science-policy interface work, in addition to the training of new scientific experts;
 - b. a lack of experts and/or resources as well as limited potential of political intervention, which impede the active and effective participation of many countries in international science-policy interface work;

- c. a lack of specific evidence as well as of scientific consensus (and confidence) at the international level to support decision-making at the national level;
- d. challenges associated with language barriers for participation in international science-policy interface work;
- e. information and reports from many countries are often in national/ local publications and/or not in English, and they are therefore often not included in international assessments;
- f. lessons learned from existing science-policy interface bodies/ mechanisms such as POPRC and CRC show that in several areas there is sufficient scientific information available to address a particular issue, and the challenge is rather related to political will, which cannot be addressed strictly by a science-policy interface;
- g. a lack of consensus of scientific information on certain issues;
- h. often there are missing links between ongoing and upcoming mega-trends (e.g. transition to a circular economy) and chemicals and waste issues;
- i. a lack of adequate coordination across many existing bodies/ mechanisms.

4. Possible functions of a strengthened science-policy interface

During the discussions, functions of a strengthened science-policy interface were suggested by participants (without prioritization) as follows:

- 1) early warning and horizon scanning with outcomes brought to the attention of policy communities;
- 2) monitoring and assessment of progress;
- 3) contextualization: collecting, reviewing, digesting, synthesizing and translating of i) specific policy needs/questions into research questions and ii) scientific information into actionable information for policy-makers;
- 4) conducting peer-reviewed scientific assessments and translating results for different audiences (e.g. from scientific data into policy-relevant information) including in languages other than English;
- 5) ensuring communication between scientists and policy-makers (as well as with the public) when needs arise;

- 6) covering emerging and legacy issues of concern, as well as generic chemical management issues;
- 7) providing knowledge management (including capacity building) to ensure easy accessibility to the extensive range of existing information and knowledge (including on the local level), including options for the context-specific prioritization of data for different communities/countries;
- 8) integration of science from different fields (e.g. human health and the environment as well as labor and agriculture);
- 9) contributing to reducing scientific uncertainty and to reaching scientific consensus, but also recognizing that uncertainty is inherent to scientific data, and timely policy action should be ensured despite this uncertainty.

5. Specifics to be considered in the design of a strengthened science-policy interface

During the discussions, the following specific characteristics were suggested by different participants to be potentially considered in the design of a strengthened science-policy interface:

- 1) credibility (e.g. through peer-review and stakeholder consultation processes for relevant products), legitimacy, processes to ensure independence of scientific research, saliency;
- 2) transparency (including procedures for selection of data and experts);
- 3) budget;
- 4) flexibility allowing it to reflect the diversity and complexity of chemical issues and different needs of different stakeholders/countries/contexts;
- 5) being policy-relevant but not policy-prescriptive;
- 6) either voluntary or compulsory participation/involvement;
- 7) a balanced, multidisciplinary perspective (e.g. inclusion of socio-economic aspects, ecosystem services, and other disciplines, as needed) and avoidance of cherry-picking evidence;
- 8) ensuring governmental and stakeholders' buy-in and ownership through an inclusive approach (multi-stakeholder and multi-sectoral);
- 9) direct links to policy frameworks, e.g., the sound management of chemicals and waste beyond 2020;
- 10) a clear mandate and vision with no duplication of work;

- 11) a consideration of the needs of developing countries, countries with economies in transition, and the poor in all countries, including the very different circumstances that can exist (e.g. DDT still being a topic of discussion; lack of technical capacities);
- 12) specific review of scientific information produced in developing countries that is not necessarily easy to access;
- 13) good practice of a science-policy interface as learned from existing science-policy interface bodies;
- 14) balanced participation taking into account factors such as gender and regional diversity;
- 15) a precautionary approach (e.g. assessments done by one interface body can be used by other interface bodies) and the precautionary principle⁷.

6. Institutional arrangements

Prior to the workshop, three options were proposed by the IPCP in its “Thought Starter on Options for a Way Forward”⁸ to the workshop participants: i) establishing an IPCC/IPBES-like Panel, ii) establishing a network of networks, and iii) expanding the activities of the IOMC organizations. During the workshop, potential institutional arrangements needed for a strengthened science-policy interface were not discussed in detail and not by all participants. However, a range of options were mentioned by some participants during the discussions as follows, whereas some participants stated that a broader spectrum of options should be considered. In addition, some participants mentioned that the form of institutional arrangements should follow its functions, have no duplication of work, and be subject to available resources and cost-benefit balances.

- 1) Option A: to have an intergovernmental panel on chemicals and waste modeled on the functions of existing intergovernmental institutions such as IPCC and IPBES. This was noted as offering a global overview, a comprehensive perspective, early warning capabilities, and high credibility (governmental approval and stakeholders’ buy-in). However, concerns were mentioned regarding the financial costs of such a panel.

7 Principle 15 of the Rio Declaration from the Earth Summit in 1992: Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation: <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>

8 The IPCP’s thought starter in preparation for the workshop: <https://www.ipcp.ch/wp-content/uploads/2019/02/IPCP-Sci-Pol-WorkshopThoughtStarter2018.pdf>

- 2) Option B: to have a network of networks, e.g., through using a lean central hub to support the coordination and collaboration between existing and future science-policy interface bodies. This was noted as offering flexibility and agility; however, effort required for logistics would need to be minimized.
- 3) Option C: to enhance existing interface bodies to meet the needs of a strengthened science-policy interface.
- 4) Option D: to have a hybrid option between Option A and Option B through having a network of networks institutionalized with an intergovernmental nature.
- 5) Option E: to have a hybrid option between Option B and Option C.



STRENGTHENING THE SCIENCE- POLICY INTERFACE IN INTERNATIONAL CHEMICALS GOVERNANCE:

A Mapping and Gap Analysis



February 2019



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ABOUT THE IPCP

The IPCP is a global network of academic scientists working on issues related to chemical pollution. It aims to provide leadership in identifying priority topics of concern and bridging the gap between science, policy and the public. The IPCP strives to develop a scientifically sound and balanced view of major issues of chemical pollution and evaluate different options for chemicals management. Based on its scientific expertise, the IPCP supports political processes at both the national and international levels.

DESIGN AND LAYOUT

Thomas Kast, Switzerland



EXECUTIVE SUMMARY

Over the next two decades, global chemical production is set to double, primarily outside of developed countries. Governments and stakeholders from industry, academia and civil society are striving to address safety concerns and manage the risks associated with the production and use of chemicals and associated wastes. In 2006, the international community adopted the Strategic Approach to International Chemicals Management (SAICM), which aims to ensure the management of chemicals throughout their life cycles and to minimize negative impacts on the environment and human health. The sound management of chemicals and waste is an important aspect of achieving sustainable, inclusive and resilient human development by 2030, as defined in the Sustainable Development Goals. However, SAICM will end in 2020. Currently, an intersessional process is taking place to define international efforts for the sound management of chemicals and waste beyond 2020. One key topic is whether the science-policy interface (SPI) should be strengthened and, if so, how this could best be achieved.

This report aims to inform governments and stakeholders about this topic. It outlines desirable objectives and functions of a strong, two-way SPI identified by a group of international experts, maps the existing science-policy interface bodies in the chemicals and waste cluster, identifies gaps based on desirable objectives and functions, discusses lessons learned from other clusters, and explores different scenarios for strengthening the interface.

KEY MESSAGES

- **Outlook:** over the next two decades, global chemicals production will double, increasing waste, safety concerns, and potential impacts on the environment and human health.
- **Needs:** to define a strong, two-way science-policy interface as part of the global efforts for the sound management of chemicals and waste beyond 2020.
- **Benefits:** science-policy interface bodies generate an enabling environment for science and policy to grow; build visibility, awareness, credibility, legitimacy, and confidence around issues; and they foster commitment, participation, exchanges, synergies and cooperation.
- **Much has been achieved, but some challenges remain:** limited two-way communication between science and policy; narrow range of objectives and functions; limited effective participation from developing and transition countries due to a lack of time, resources and expertise; limited alignment of communication and coordination; and limited awareness beyond the chemicals and waste cluster.
- **Possible options for strengthening the science-policy interface:**
 1. Establishing an intergovernmental panel
 2. Strengthening existing interface bodies using a network-of-networks approach
 3. Expanding activities of the IOMC organizations

Benefits of a strong, two-way interface

SPI bodies aim to raise awareness of risks and possible solutions associated with a particular issue among policy-makers and the general public. They provide a framework within which scientists assess scientific evidence, and they provide recommendations or offer consensus to policy-makers on a specific issue. Such interfaces increase the knowledge base, foster information exchange, and facilitate ownership, effective participation, and opportunities for stakeholders.

In particular, SPI bodies have the potential to generate enabling environments for scientists, policy-makers, and stakeholders to work more effectively, both individually and jointly. Through high-level political involvement of member states, the SPI bodies have points of contact within national governments, allowing them to gain visibility and foster political commitment. Due to regular exchange, scientists are better involved in decision-making processes, while policy-makers have direct access to experts in the scientific community. Policy-makers and stakeholders can access relevant information and tools on centralized platforms, allowing them to monitor progress and conduct searches, analyses and comparisons to answer their questions.

In addition, SPI bodies have the potential to increase public awareness, participation, and motivation necessary for society to accept, implement and comply with new legislation. Improved transparency, accountability and democratization of knowledge increases trust and public involvement in the policy-making process, and these improvements also support inclusion and opportunities for younger researchers and students, in particular also from developing countries, who can get involved through fellowships and scholarships.

Furthermore, SPI bodies foster credibility as they present reliable findings by using transparent practices complying with high scientific standards and technical integrity. They generate legitimacy because they benefit from stakeholders' support and carry out work that is relevant to stakeholders' needs. Stakeholders, in turn, are committed because they are involved in the SPI bodies' functions and initiatives. Prerequisites are efficient structures that minimize duplication of work and are flexible to adapt to new requirements and circumstances.

Current gaps and opportunities

A wide range of SPI bodies exist in the field of international chemicals and waste management. They cover individual chemicals, or groups of chemicals, along different stages of their life cycles, and they deal with their impacts on human health and/or the environment. Most SPI bodies address specific, well-known chemical pollution issues, while some also have additional mandates to identify issues with emerging evidence of concern. Because of insufficient and often one-way communication, scientists and policy-makers are many times not up-to-date with the developments and needs outside their respective fields. As a result, scientific expertise on pressing issues often

does not reach policy-makers in time. Moreover, scientists and policy-makers miss opportunities for synergies and joint strategies, leading to many issues not being addressed in the most effective and timely manner. In addition, many SPI bodies do not monitor and evaluate progress achieved by implementing policy measures, which hinders effective quality management and progress. Despite several mechanisms to improve coordination between different SPI bodies, they could benefit from better aligning interactions to create synergies and avoid duplication of efforts.

The interface bodies considered in this report have implemented rules, procedures and measures to address the needs and circumstances of developing and transition countries, and to facilitate their representation and participation in relevant processes. Inclusion, however, remains a challenge due to limited capacity to attend international meetings, a lack of scientific experts, insufficient language and literacy skills, as well as underrepresentation and limited visibility of scientific knowledge produced in developing and transition countries at the international level.

Extensive knowledge bases to support decision-making are available on the websites of many SPI bodies. It can, however, be challenging to find relevant data and reports on underlying frameworks, methodologies, processes and different subjects, as information on one specific topic is often scattered over several locations. This impairs effective access to data and efficient use of resources. A centralized repository linking existing databases could be useful, as it would create a platform for sharing knowledge to respond to the complex nature of international chemicals governance.

Other additional generic challenges of SPI bodies include limited awareness of activities beyond and even within the chemicals and waste cluster, as well as the fact that timelines do not necessarily match policymaking needs and that communication and outreach require time, resources, and expertise.

The analysis presented in this report shows that there is not one size and structure that fits every purpose. Institutional setups, functions, processes and outputs evolve over time based on experience, challenges, trial-and-error, external reviews, and feedback from stakeholders. Their structures are adapted to different needs and existing conditions within each setting, allowing the SPI bodies to fulfill their functions and mandates.

Outlook

Based on identified gaps in the current science-policy interface and lessons learned from other clusters, this report explores three options for strengthening the science-policy interface in international chemicals governance. They are not mutually exclusive, and hybrid solutions are possible.

- **Option 1:** An intergovernmental mechanism, modeled on the existing intergovernmental interface bodies in other clusters (such as the IPCC and IPBES).

Pros: Such a panel would offer a comprehensive, global perspective and overview with high credibility and stakeholder commitment. It would raise awareness of chemical and waste management issues among politicians and the general public and increase participation.

Cons: Such a mechanism can be costly and inflexible, which entails lengthy processes and would complicate production of up-to-date output.

- **Option 2:** A network-of-networks where a lean hub coordinates activities of existing and future SPI bodies.

Pros: This structure increases efficiency and effectiveness of existing interface bodies and promotes synergies. It offers flexibility and agility, while keeping administration to a minimum. It may attract and engage new actors.

Cons: It may be a challenge to motivate stakeholders to commit themselves to working at the interface.

- **Option 3:** Strengthen existing interface bodies under the UN's Inter-Organization Programme for the Sound Management of Chemicals (IOMC). Expand and formalize the activities of existing organizations to cover all chemicals and relevant issues.

Pros: An extensive network already exists, and such a set-up would benefit from existing experience.

Cons: Organizations and governing bodies would have to coordinate their activities closely, and limited resources and capacities may complicate such an endeavor. A focus on policies may restrict input from science.

LIST OF ACRONYMS

ACS	American Chemical Society
AMAP	Arctic Monitoring and Assessment Programme
BRS CONVENTIONS	Basel, Rotterdam and Stockholm Conventions
CAC	FAO/WHO Codex Alimentarius Commission
CAS	Chemical Abstracts Service
CFCs	Chlorofluorocarbons
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CRAN	Chemical Risk Assessment Network (WHO)
DDT	Dichlorodiphenyltrichloroethane
ECHA	European Chemicals Agency
EDCs	Endocrine Disrupting Chemicals
EHS	Environment, Health and Safety (EHS Division, OECD) or Evaluation of Harmful Substances (EHS Working Group – GESAMP)
EMEP	Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe
FAO	Food and Agriculture Organization of the United Nations
GAPS	Global Atmospheric Passive Sampling
GCO	Global Chemicals Outlook
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GEF	Global Environment Facility
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GMP	Global Mercury Partnership
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
ICCM	International Conference on Chemicals Management
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change

LIST OF ACRONYMS

IPCP	International Panel on Chemical Pollution
IPCS	International Programme on Chemical Safety
IRP	International Resource Panel
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JMPM	Joint FAO/WHO Meeting on Pesticide Management
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
MEA	Multilateral Environmental Agreement
ODS	Ozone-Depleting Substance
OECD	Organisation for Economic Co-operation and Development
OEWG	Open-Ended Working Group of the Basel Convention
PEN	PCB Elimination Network
POPRC	Persistent Organic Pollutants Review Committee of the Stockholm Convention
POPs	Persistent Organic Pollutants
PRTR	Pollutant Release and Transfer Register
RAC	Committee for Risk Assessment (ECHA)
RSC	Royal Society of Chemistry
SAICM	Strategic Approach to International Chemicals Management
SAP	Scientific Assessment Panel of the Montreal Protocol
SCE	Sub-Committee of Experts on the GHS
SEAC	Committee for Socio-Economic Analysis (ECHA)
SPI	Science-Policy Interface
STAP	Scientific and Technical Advisory Panel (GEF)
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNEA	United Nations Environment Assembly
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNITAR	United Nations Institute for Training and Research
WHO	World Health Organization

DEFINITIONS OF KEY TERMS

Chemicals governance: Governance of chemicals throughout their entire life cycles. Although the term “waste governance” is not explicitly mentioned in this report, waste governance is considered part of a comprehensive “chemicals governance” framework as it covers the end-of-life stage of chemicals and associated products. Therefore, the term “international chemicals governance” used throughout the report has largely the same, or a similar, scope as the commonly referred to “chemicals and waste” cluster (including chemicals waste, but not e.g., food waste).

Science: It refers to the “systematic pursuit of objective knowledge” [1], and encompasses both natural and social sciences. Scientific research is conducted not only by academic institutions such as universities and national research institutes, but also by certain governmental agencies, industry, civil society, and other organizations. Scientific knowledge may also include certain non-formal types of knowledge such as local, traditional and practical knowledge.

Policy: It refers to “commitments to definite courses or methods of action with broad implications, selected from among alternatives in light of given conditions, and taking account of norms, values and motives, to increase the certainty of realizing desired outcomes. Policies are adopted not only by governments and intergovernmental bodies, but are also made by companies, interest groups and other organized forms of society” [1].

Science-policy interface (SPI): Space of interactions between scientists and policy-makers to enhance science-based policy/decision-making as well as policy-relevant scientific research. A science-policy interface is facilitated by science-policy interface bodies, individuals and other science-policy interactions.

Science-policy interface body (interface body, or SPI body): A body, established permanently or in an ad-hoc manner, that undertakes certain activities at the science-policy interface; these activities do not necessarily need to be the sole function of the body.

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1. INTRODUCTION

1.1 BACKGROUND

Chemicals play important roles in contemporary societies: from pharmaceuticals that help to save lives from fatal diseases and increase life expectancy, to many agrochemicals that help to protect crops from harmful pests [2]. To date, it is estimated that the global chemical industry has produced over 100,000 individual and mixtures of chemicals [2], with an annual turnover between 3–4.1 trillion US Dollars in 2010 [3]. Over the next two decades, worldwide chemical production is projected to double from 2010 to 2030, with 71 percent of this new production expected outside of developed countries, particularly in countries with economies in transition such as Brazil, India and China [2], which generally have less resources and capacity to manage chemicals compared to developed countries. While chemicals provide many desired benefits, it has been increasingly recognized that some of them also cause undesired adverse effects on human health and the environment [4,5], while the full range of potential adverse effects of chemicals is not yet fully understood.

With increasing scientific understanding and public awareness of chemicals and their related issues, continuous efforts have been and are being made by many governments and stakeholders to assess and manage their risks and safety concerns, e.g. by reducing exposure and by restricting and/or phasing out chemicals with certain hazardous properties. At the international level, a common practice has been to establish legally-binding multilateral environmental agreements (MEAs) to address a variety of specific chemical-related issues on global and inter-regional scales (for examples, see [6]). The Montreal Protocol on Substances that Deplete the Ozone Layer is one such framework that was adopted in 1987 to reduce the production and consumption of ozone-depleting substances (ODSs) so as to lower their abundance in the atmosphere, thereby protecting the Earth's protective ozone layer [7].

However, the current legally-binding MEAs have a rather fragmented coordination, with two major gaps [8]: (1) Different levels of membership in the various agreements create membership gaps that make it difficult to link two or more agreements in attempts to save time and to benefit from previous work in setting up effective regulations; (2) Regulatory gaps result from current agreements focusing on a limited set of chemicals and from their diverse activities not covering an identical set of chemicals, which has resulted in a lack of regulation throughout the whole life cycle of many chemicals of concern, both internationally and within many countries (e.g. [9]). In response to this, it has long been discussed that efforts need to be made to establish and facilitate a comprehensive international chemicals governance framework for all chemicals throughout their entire life cycles [8,10], including the end-of-life stage of chemicals and associated products.¹

This momentum led to the establishment of the Strategic Approach to International Chemicals Management (SAICM) in 2006, a voluntary policy framework with participation of more than 175 governments, as well as over 90 intergovernmental organizations and non-governmental organizations from industry, academia and civil society [11]. SAICM has the overall objective to achieve “the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health” [12]. It complements existing chemicals-related MEAs with one of its key goals being to ensure that all of these MEAs are ratified and subject to implementation legislation in countries [13]. At the same time, SAICM Stakeholders may identify any issues of concern (also known as Emerging Policy Issues) as they arise and call for cooperative action [12]. To date, eight issues of concern have been recognized, covering certain chemical groups or chemical management practices, and international cooperative actions have been initiated to address them. Thus, SAICM plays a substantial policy role in international chemicals governance; however, its mandate expires in the year 2020. To ensure the continuity of efforts and potentially create an enhanced platform to support the implementation of the 2030 Agenda for Sustainable Development, SAICM Stakeholders are currently engaged in an Intersessional Process to negotiate sound management of chemicals and waste beyond 2020 (as set out in ICCM Resolution IV/4), with its first meeting held in February 2017 in Brazil [14].

The participation of science has not been institutionalized in SAICM; instead, SAICM was designed with a minimalist governance structure aiming to catalyze support and action from existing bodies, including the role of science. Given the broad mandate of SAICM and its successor, it is relevant to ask whether the current model is sufficient or if the sound management of chemicals and waste beyond 2020 would benefit

1 Although the term “waste governance” is not explicitly mentioned in this report, waste governance is considered part of a comprehensive “chemicals governance” framework as it covers the end-of-life stage of chemicals and associated products. Therefore, the term “international chemicals governance” used throughout this report has largely the same, or a similar, scope as the commonly referred to “chemicals and waste” cluster (including chemicals waste, but not e.g. food waste).

from greater institutionalization of scientific input into decision-making. Against this backdrop, a number of topics were discussed at the first Intersessional Process meeting (SAICM, 2017b), including the science-policy interface (SPI): in particular, it was discussed whether a new science-policy interface body (hereafter referred to as “interface body” or “SPI body”), similar to the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), would need to be established to strengthen the link between science and policy in international chemicals governance beyond 2020 [14].

1.2 WHY ARE SCIENCE-POLICY INTERFACES NEEDED?

Experience shows that policy development can benefit greatly from the engagement of and contributions from the scientific community in multiple areas. Some major areas and examples of such contributions are summarized in Table 1.

Table 1. Overview of areas where policy can benefit from interaction with the scientific community

AREAS WHERE POLICY CAN BENEFIT FROM INTERACTION WITH THE SCIENTIFIC COMMUNITY	EXAMPLES
EARLY WARNING / HORIZON SCANNING Monitor the state of the global environment, identify issues of concern, and inform policy-makers and other stakeholders	- the initial identification of ozone depletion and its chemical cause in the mid-1970s [15] - the book <i>Silent Spring</i> by Rachel Carson in the 1960s [16] - early identification of POPs (e.g. [17])
KNOWLEDGE GENERATION Generate necessary knowledge (including a better mechanistic understanding of the issues) and independent scientific assessment to reduce scientific uncertainty and support policy development (including providing solid scientific evidence for making problem formulation in a policy context more accurate and policy measures more relevant, as well as providing evidence on which decision makers can base their decisions)	- the research on the causes of acid rain in Norway and Sweden led to the establishment of the Convention on Long-Range Transboundary Air Pollution (CLRTAP), e.g. [18,19] - the research on ozone-depleting substances in the stratosphere led to the negotiation and adoption of the Montreal Protocol on Substances that Deplete the Ozone Layer (e.g. [15,20]) - costs of inaction studies on EDCs [21,22] - the development of summary documents for policy-makers (containing policy options) in addition to completed scientific assessments (e.g. [23,24])

AREAS WHERE POLICY CAN BENEFIT FROM INTERACTION WITH THE SCIENTIFIC COMMUNITY	EXAMPLES
RESEARCH AND DEVELOPMENT Help to develop innovative technical solutions to issues of concern and/or policy relevant tools and methodologies (e.g. those arising from assessments) for the implementation of cooperative actions	the “MicroPoll” project in Switzerland helped to identify and develop advanced treatment technologies for removing micropollutants including pharmaceutical and personal care products from wastewater [25]
MONITORING Conduct long-term monitoring, providing quantitative scientific information for the evaluation of effectiveness of relevant policy measures	- recent identification of illegal production and use of CFC-11 [26] - various projects that monitor global mercury levels and prepare the Global Mercury Assessment, e.g. [27] - the Global Monitoring Plan under the Stockholm Convention [28] - the Global Atmospheric Passive Sampling Network for POPs [29]

In turn, the scientific community can also benefit from its engagement in relevant policy processes. Examples may range from: (1) the formulation of new research questions and the creation or development of areas of research due to the identification of research gaps and critical needs for scientific and technical advances in response to policy needs, to (2) obtaining financial resources for conducting policy-informing research and/or developing innovative solutions, to (3) nurturing a future generation of students equipped with both science and policy insights, as well as (4) growing recognition by international peers and by the education/research system that evaluates the performance of academic scientists. In this way, strong, two-way science-policy interactions may contribute to a productive co-development of science and policy.

The importance of science-policy interfaces is widely acknowledged throughout the UN system and regularly mentioned in high-level documents and decisions taken by the governing bodies of intergovernmental organizations. For example, Paragraph 88 of “The Future We Want” [30], the outcome document of the United Nations Conference on Environment and Development, calls for “a strong science-policy interface, building on existing international instruments, assessments, panels and information networks, including the global environment network, as one of the processes aimed at bringing together information and assessment to support informed decision-making”. In addition, the United Nations Environment Assembly at its first meeting in 2014 recognized “the potential benefits of a scientifically sound and evidence-based detailed assessment of the state of the environment for awareness-raising, informed policy formulation and decision-making in the context of sustainable development” (UNEA Resolution 1/4 in [31]).

The Resolution further recognized “that there are gaps in our knowledge of the state of the environment resulting from a lack of current data and information generation and dissemination” and noted “that there is an urgent need for Governments to take action to bridge those gaps through the building of capacities, the strengthening of existing mechanisms, including those of the multilateral environmental agreements, for monitoring the state of the environment and producing policy-relevant environmental assessments, which should be based on the use of established comparable methods for data collection and analysis, paying particular attention to the needs and circumstances of developing countries” (UNEA Resolution 1/4 in [31]). A recent review shows that the IPCC is the most important institution within the science-policy interface of global climate governance, and that the strength of such an intergovernmental panel is that both scientists and policy-makers adopt the main findings of the scientific reports, creating ownership and stimulating action in both the policy and scientific arenas [32].

When it comes to international chemicals governance, various MEAs recognize the importance of science-policy interfaces and have thus established their own specialized subsidiary scientific advisory and/or assessment bodies, which have delivered many scientific assessments, syntheses and reviews to inform and guide the implementation of the respective conventions. Recently, at their meetings in 2015, the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions (hereafter referred to as “BRS Conventions”) adopted identical decisions entitled “From science to action” (BC-12/22, RC-7/12, SC-7/30; see [33]), recognizing “the importance of the science-policy interface for the effectiveness of the Conventions” and “the need for greater access to scientific understanding in developing countries to enhance informed decision-making on the implementation of the Conventions”. The decisions further stressed “the need for scientific underpinning for decision-making and policy-making in the sound management of hazardous chemicals and wastes at the national and regional levels”. In addition, multiple intergovernmental organizations, e.g., the member organizations of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), have established respective units to address specific needs of the science-policy interface within their own mandates. Furthermore, science-policy interaction is also mentioned several times in the Overarching Policy Strategy (OPS) of SAICM, especially with respect to its objectives of risk reduction, knowledge and information, and capacity-building and technical cooperation. In particular, it is a built-in objective of SAICM to achieve a two-way exchange between science and policy (for examples, see Table 2 as well as OPS Para. 14c and 15g in [12]).

To date, SAICM has to a certain extent supported engagement of the scientific community, particularly through the establishment of several interface bodies around the identified Emerging Policy Issues and Other Issues of Concern (e.g. OECD/UNEP Global PFC Group, Advisory Group for UNEP on the Environmental Exposure and Impact of Endocrine Disrupting Chemicals). However, it has been argued that the achievement

of this objective of a more comprehensive and complete two-way science-policy exchange is likely to have been hindered under the current structure of SAICM. A recent review suggested that a core weakness of SAICM is that it has no mechanisms to comprehensively assess progress or to identify emerging problems and bring them to the attention of governments, which hampers its ability to monitor progress and direct resources and attention to the most pressing areas of concern [32]. In addition, the participation of academic scientists and institutions, a key stakeholder group in the sound management of chemicals and waste, is currently very limited in the SAICM processes, particularly in the process of identifying issues of concern. In practice, scientific evidence, which is to a large extent generated by academic scientists and institutions, is mostly presented and debated by stakeholders other than academic scientists to justify, or argue against, the listing of a new issue of concern. This may lead to a mixture of both scientific and political debates occurring within the same discussion and very limited to no feedback flowing back to academic institutions in terms of key scientific needs [34].

TABLE 2. SAICM objectives that are related to a science-policy interface, as listed in the Overarching Policy Strategy [12]

SAICM OBJECTIVES RELATED TO A SCIENCE-POLICY INTERFACE	
RISK REDUCTION	Para 14c: to implement transparent, comprehensive, efficient and effective risk management strategies based on appropriate scientific understanding ... and appropriate social and economic analysis aimed at pollution prevention, risk reduction and risk elimination ... to prevent unsafe and unnecessary exposures to chemicals;
KNOWLEDGE AND INFORMATION	Para 15d: to make objective scientific information available for appropriate integration into risk assessments and associated decision-making relating to chemical policy; Para 15e: to ensure that science-based standards, risk assessment and management procedures and the results of hazard and risk assessments are available to all actors; Para 15f: to make objective scientific methods and information available to assess the effects of chemicals on people and the environment, particularly through the development and use of indicators; Para 15g: to accelerate the pace of scientific research on identifying and assessing the effects of chemicals on human beings and the environment, including emerging issues, and to ensure that research and development are undertaken in relation to chemical control technologies, development of safer chemicals and cleaner technologies and non-chemical alternatives and technologies.
CAPACITY-BUILDING AND TECHNICAL CO-OPERATION	Para 18g: to encourage stakeholders to develop and promote programmes on chemical safety and scientific research and analysis and to assist with capacity-building programmes in developing countries and countries with economies in transition.

1.3 THE CURRENT DISCUSSION ON STRENGTHENING THE TWO-WAY SCIENCE-POLICY INTERFACE

The current discussion on the science-policy interface in international chemicals governance has taken place both within and outside of the Intersessional Process for considering SAICM and the sound management of chemicals and waste beyond 2020. This section provides a brief summary below. In brief, the ongoing discussion shows that a number of stakeholders are interested in reviewing and exploring options to strengthen the two-way science-policy interface in international chemicals governance. With the ongoing discussions on the sound management of chemicals and waste beyond 2020, now is likely an ideal time to do so.

Discussion within the Intersessional Process

Before the first meeting of the Intersessional Process, a thought starter document was developed by the SAICM Secretariat including a dedicated section on the role of science and its link to both policy and implementation (see Annex 1). In response to the thought starter document, a number of stakeholders from intergovernmental organizations, governments, industry, civil society and academia provided their feedback during and after the first meeting (see Annexes 2 and 3). In particular, the co-chairs of the Intersessional Process summarized the discussion at the first meeting with the following points:

- “Explore how to strengthen the link between science, public health and policy in global chemicals and waste governance.
- Recognize the existing mechanisms for provision of scientific advice on chemicals and waste by intergovernmental and international bodies such [as] UNEP, WHO and the chemicals and wastes conventions secretariats.
- Consider the social interface and the full range of scientific and public health disciplines.
- Explore approaches [to] the use of science to inform policy-making and action, including existing mechanisms in other clusters such as climate change and biodiversity.
- There were also comments regarding the need to focus on scientific capacity-building and caution about diverting resources from implementation.”

Before the second meeting of the Intersessional Process, two documents were made available to the participants: (1) A review of the science-policy interfaces in other fields such as climate change and biodiversity including their missions, objectives, management, products and procedure [35], and (2) “a brief outline of selected existing

fora and mechanisms to provide science advice on chemicals and waste issues and how these interface with the decision making processes of intergovernmental and international bodies as well as multilateral environmental agreements” [36]. The latter document focused on the work of the Food and Agriculture Organization (FAO), the World Health Organization (WHO), the FAO/WHO Codex Alimentarius Commission (CAC), the Organisation for Economic Cooperation and Development (OECD), the United Nations Environment Programme (UN Environment, hereafter referred to as “UNEP”), and the science-policy interfaces of the BRS Conventions and the Montreal Protocol. It suggested the following questions to be further considered:

- “What are the key gaps that are currently not covered by existing fora/organizations? Could the existing bodies be modified to fill these gaps?”
- How would a new forum work with existing specialized agencies/expert bodies? What would be the value-added of such a forum?
- Where would the funding for a new interface come from?
- How would scientific integrity of the advice be assured?
- Science-policy interfaces are complex, and evidence alone may not be sufficient, for example when there are divergent viewpoints among stakeholders, and national or local economic and in some cases political drivers can be in play. How can the international community help countries to overcome/change these drivers?”

The second meeting built on these documents and previous discussions from during and after the first meeting. The meeting report [37] noted that “many participants [further] stressed the need to integrate science in the beyond 2020 framework and to increase the science policy interface and engage academia in activities related to sound management of chemicals and waste. It was noted that the effects of chemicals and waste mis-management must be appreciated by government officials and a good way to achieve that was by raising the profile of the science-policy interface. While some participants proposed the establishment of a stand-alone scientific panel similar to the Intergovernmental Panel on Climate Change or the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services, others recalled the high costs involved in establishing and running a new body”. Some participants further “urged caution that the work of existing scientific bodies established under the chemicals conventions and other international bodies should not be undermined nor duplicated. While there was a need for improved integration of scientific advice and policy making in the area of chemicals and waste, these should address the gaps and issues that went beyond existing bodies”. It was also “noted that gathering lacking information might need some time and hence requires a long-standing engagement of academia and policy-makers”. Furthermore, during the discussion groups, it was “suggested that there is further untapped potential within academia that should

be considered, including at the national level”. Some participants further called “for increased transparent, flexible, scientifically sound and academically robust engagement beyond 2020. This would include the need for two-way dialogue, in particular at the national level, between the science community and policy-makers as well as awareness raising amongst scientists”.

Discussion outside of the Intersessional Process (1) - under the BRS Conventions

Currently, a roadmap [38] is being developed for further engaging Parties and other stakeholders in an informed dialogue for enhanced science-based action in the implementation of the Basel, Rotterdam and Stockholm Conventions at the regional and national levels. This was mandated by the Conferences of the Parties to the BRS Conventions at their meetings in 2015 and 2017. In particular, an online survey was conducted, and the following challenges were identified from the 127 responses received (governments: 72; intergovernmental organizations: 6; regional centers: 9; industry: 11; civil society: 13; academia: 13; others: 3):

- The cost of obtaining information;
- The many data gaps, especially data relevant to countries that are non-OECD countries and the lack of capacity to generate data in developing and transition countries;
- The lack of information in national languages;
- The need for improved networking, exchange of information and communication among Parties to the Conventions and all stakeholders involved in the sound management of chemicals and waste (private sectors, civil society, academia), as well as increased participation of youth;
- The lack of national capacity to review and assess information including the capacity to undertake systematic reviews of evidence (including developing the search strategy, assessment of articles, and synthesis of the information); and
- Knowledge translation, i.e. making scientific information understandable to policy-makers as well as a general audience, so that it can be used effectively in decision-making.

The online survey further suggested that “an improved science-policy interface could facilitate the decision-making in the BRS Conventions and support their effective implementation”.

Discussion outside of the Intersessional Process (2) - findings in the Global Chemicals Outlook II

During the preparation of the Global Chemicals Outlook (GCO) II², the authors of Section 1 noted that “large amounts of data, studies and reports are available regarding chemicals production, consumption, pollution, concentrations and effects. However, a number of challenges have been encountered in identifying, reviewing and consolidating knowledge, and in establishing global baselines. Disparities can be observed in data availability across countries and regions, making the identification of trends and comparability difficult, for example, regarding chemical releases and concentrations. Research is often undertaken using different protocols and methods, for example, in determining the effects of chemicals on human health and the environment and translating these effects into economic costs and benefits”. The authors further noted that “while significant progress has already been made in addressing challenges of data collection and harmonization – the OECD test guidelines being a good example – questions and opportunities for strengthening the role of science include the following:

- For which topics is there potential to standardize units of analysis and harmonize tools and methods to facilitate comparability of results?
- Which steps need to be taken to gather available data in a more systematic manner?
- How can capacities in developing countries be strengthened to enable data collection, analysis and sharing in all countries and regions?
- How can existing knowledge be synthesized and consolidated at the global level to establish a global baseline and track progress over time?”

Discussion outside of the Intersessional Process (3) – discussion by the Ad Hoc Open-ended Expert Group on Marine Litter and Microplastics

During the second meeting of the group on 3–7 December 2018 in Geneva³, Switzerland, the experts “agreed that there was a need to strengthen the science/policy interface at the international level and to do more to support evidence-based approaches, improve understanding of the impacts of plastic litter on the marine environment, and promote local, national, regional and global action on eliminating marine

² At the time of preparation and revision of this report, the Global Chemicals Outlook (GCO) II was still in the final stage before publication. Therefore, the quotes here were taken from a close-to-final draft and may differ from the final version of the GCO II.

³ At the time of preparation and revision of this report, the outcome document of the second meeting was still in the final stage before publication. Therefore, the quotes here were taken from a close-to-final draft (after one round of revision) and may differ from the final version of the outcome document.

litter”. The experts further proposed to “consider the establishment of a scientific and technical advisory group on marine litter and microplastics, benefiting from the work of existing mechanisms such as [the] Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection”. In addition, the experts proposed that enhanced coordination and governance “should be supported by and grounded in: a science/policy interface; international cooperation; multi-stakeholder engagement; realities of differences in regional and local contexts and (technical/financial) capacities”.

1.4 INTERNATIONAL CHEMICALS GOVERNANCE VS. OTHER CLUSTERS

In comparison to other clusters such as those concerning climate or biodiversity, international chemicals governance presents both similarities and differences. Commonalities with these other clusters include the high stakes involved (i.e. the risks to human health and environment) and the urgency of decision-making and implementation of improvement measures. However, the chemicals (and waste) cluster also faces many of its own unique challenges, including (1) the existence of a large number of highly diverse chemicals, with over 100,000 CAS numbers [2] to be assessed and managed, (2) many new types of chemicals under development, (3) many diverse potential physical, chemical and biological effects (acute, chronic and cross-generational) on the environment, wildlife and human health, and (4) mixture effects of simultaneous exposure to many chemicals. These complexities often require a large body of knowledge from diverse disciplines, as well as agility to quickly respond to issues with emerging evidence of concern. In addition, in comparison to climate change and biodiversity loss, the adverse effects of chemicals are abstract and often invisible to most people, resulting in little public awareness or pressure for action. Therefore, the science-policy interface in international chemicals governance not only needs to draw lessons learned from the science-policy interfaces in other clusters, but also consider and address its own specificities, as mentioned above.

1.5 MOTIVATION, AIM AND SCOPE OF THE PRESENT STUDY

As introduced above, various stakeholders have expressed broad support for a strong, two-way science-policy interface in international chemicals governance, while recognizing the achievements of existing interface bodies, particularly those under the MEAs and those established by various intergovernmental organizations. In addition, there is general agreement among stakeholders that duplicated efforts should be avoided, as also indicated by the overview paper prepared by the WHO, UNEP, BRS Secretariat and OECD [36]. However, currently there is no clear, common understanding of the desired overall objectives and functions of the science-policy interface in international chemicals governance and whether existing bodies already cover all, or a part, of these objectives and functions. This lack of clarity with regard to the overall objectives and existing gaps motivates the study presented here, i.e. to clarify them as a solid basis for further consideration and discussion on the necessity and

feasibility of options to strengthen the two-way science-policy interface in international chemicals governance.

This report presents the results of a mapping and gap analysis of existing science-policy interface bodies in international chemicals governance and a review of lessons learned from science-policy interfaces in other clusters (e.g. biodiversity, climate) as a reference point for further consideration. In particular, this report aims to inform international policy-makers by investigating the following two main questions:

- 1) What are the desired needs/objectives and functions of a strong two-way science-policy interface in international chemicals governance? (Section 3)
- 2) How and to what extent are these objectives and functions fulfilled by existing interface bodies/processes? Based on this, what are the major gaps? (Section 4)

Building on the review of the scope, functions, organization and other aspects of existing science-policy interface bodies as well as lessons learned from other clusters (Section 5), this report then explores several options on where improvements could be made to strengthen the overall science-policy interface (Section 6). It should be noted that the options included in this report are intended to be comprehensive and illustrative, but not necessarily exhaustive.



2. METHODS & PROCESS

2.1 METHODS

The analysis presented here was completed in four major steps: (1) identification of desired objectives and functions of a strong two-way science-policy interface in international chemicals governance (Section 3), (2) a mapping and gap analysis of existing interface bodies (Section 4), (3) a review of lessons learned from the interfaces/interface bodies in other clusters (Section 5), and (4) exploration of options for a way forward in strengthening the science-policy interface (Section 6).

In the first step, the desired objectives and functions of a strong science-policy interface were identified through a literature review and inputs from stakeholders during a dedicated workshop on this topic (for details of the workshop, see Section 2.2).

In the second step, the mapping and gap analysis involved the mapping of existing science-policy interface bodies in the realm of chemicals governance on the global, inter-regional, regional and national levels. The analysis then took a closer look at the interface bodies with the aim of gaining an overview, particularly with regard to their: i) overall scope, ii) work areas, iii) mechanisms for addressing the needs of and circumstances within developing and transition countries, and iv) networking, coordination, and knowledge sharing with other interface bodies. By comparing the status quo against the desired objectives and functions of a strong, two-way SPI (from the first step), gaps were identified that indicate areas where improvements could be made in order to achieve a strengthened two-way interface.

Because of the breadth and complexity of the institutional landscape in the field of international chemicals governance, and due to the restricted time and resources available, not all existing interface bodies were included in the gap analysis, particularly the

many bodies that exist on the regional, national and local levels. Focus was instead placed on reviewing those interface bodies that have global to inter-regional coverage (see Table 3). Thus, the analysis is meant to be comprehensive for the international context, but not necessarily exhaustive. Information about each interface body was collected through a review of publicly accessible online information and personal communication with representatives from the interface bodies (including a questionnaire sent to some of the interface bodies; see Annex 4). The quality and completeness of the data sets considered depends on the availability and (online) accessibility of data and the survey responses received. In some cases (e.g. with regard to active expansion of interface bodies' networks), a complete analysis for all interface bodies considered could not be completed due to data gaps; such data gaps are clearly indicated in the respective discussion later in this section. The full, detailed results for all guiding questions are not presented in this report; instead the key trends, common practices, and identified gaps are summarized.

In the third step, a desk review was conducted for four existing international interface bodies from the climate, biodiversity, ocean and desertification clusters to draw lessons from (1) their institutional setup and outputs, (2) their positive impacts, (3) factors contributing to their effectiveness, and (4) limitations and challenges within and beyond them. Information was collected from peer-reviewed scientific literature and documents published by the bodies and their associated MEAs (e.g. workshop and plenary documents, resolutions, reports, and summaries). Additionally, representatives from individual bodies were contacted for clarification(s), where needed.

Building on an integration of the previous three steps, the fourth step explored options for strengthening the science-policy interface in international chemicals governance. Additional information related to the interface bodies considered in this study, including their outputs, organizational structure, and rules and procedures, was collected and is summarized in Annex 5. This information may also be used to inform the design of a strengthened science-policy interface in the future.

2.2 PROCESS

The first draft of this report was presented and discussed at the “Workshop on Strengthening the Science-Policy Interface in International Chemicals Governance” on November 15–16, 2018 in Geneva, Switzerland, with the participation of experts from 10 intergovernmental organizations, 14 national and regional governments, and 6 international non-governmental organizations representing academia, the chemical industry and civil society (hereafter referred to as the November 2018 workshop). Prior to the workshop, participants were provided with a thought starter document (see the website of the International Panel on Chemical Pollution (IPCP); [39]). In particular, during the workshop, experts discussed and exchanged views on (1) needs for a strong, two-way science-policy interface, (2) the current science-policy interface, (3) possible functions of a strengthened science-policy interface, (4) specifics to be

considered in the design of a strengthened science-policy interface, and (5) institutional arrangements. Input from stakeholders during and after the workshop was used to inform the final version of this report. In addition, a separate workshop summary document has also been made available on the website of the IPCP [40].

TABLE 3. Overview of the science-policy interface bodies included in this study: their associated MEA/host organization/sponsoring organization, homepage, and mandates

ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION HOMEPAGE MANDATE OF THE SPI BODY
UNDER MEAS
OPEN-ENDED WORKING GROUP (OEWG)
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
http://www.basel.int/TheConvention/OpenendedWorkingGroup(OEWG)/OverviewandMandate/tabid/2295/Default.aspx
(1) To assist the Conference of the Parties (COP) in developing and keeping under continuous review the implementation of the Convention's work plan, specific operational policies and decisions taken by the COP for the implementation of the Convention, as specified in Article 15; (2) to consider and advise the COP on issues relating to policy, technical, scientific, legal, institutional, administration, finance, budgetary and other aspects of the implementation of the Convention within the approved budget, including identification of the specific needs of different regions and subregions for training and technology transfer and to consider ways and means of ensuring the establishment and functioning of the Basel Convention Regional Centres for Training and Technology Transfer; (3) to prepare its work plan for consideration by the COP; (4) to report to the COP on the activities it has carried out between meetings of the COP (Decision VI/36).
CHEMICAL REVIEW COMMITTEE (CRC)
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
http://www.pic.int/TheConvention/ChemicalReviewCommittee/OverviewandMandate/tabid/1059/language/en-US/Default.aspx
To review chemicals and pesticide formulations according to the criteria in Annexes II and IV respectively and make recommendations to the COP for listing such chemicals in Annex III (Paragraph 6, Article 18 of the Convention).

**ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION | HOMEPAGE |
MANDATE OF THE SPI BODY**

PERSISTENT ORGANIC POLLUTANTS REVIEW COMMITTEE (POPRC)

Stockholm Convention on Persistent Organic Pollutants

<http://chm.pops.int/TheConvention/POPsReviewCommittee/OverviewandMandate/tabid/2806/Default.aspx>

To perform the functions assigned to it by the Convention, including the scientific review of the proposals and related information submitted by Parties to the Convention for listing new chemicals in Annex A, B, and/or C according to Article 8 of the Convention and to make recommendations to the COP (Handbook for effective participation in the POPs Review Committee of the Stockholm Convention, [41]).

SCIENTIFIC ASSESSMENT PANEL (SAP)

Montreal Protocol on Substances that Deplete the Ozone Layer

<http://ozone.unep.org/science/assessment/sap>

To undertake the review of the scientific knowledge in a timely manner as dictated by the needs of the Parties to the Protocol (Terms of Reference for the Panels; Annex VI of the report of the First Meeting of the Parties), assess the status of the depletion of the ozone layer and relevant atmospheric science issues, and prepare a report every 3-4 years pursuant to Article 6 of the Protocol). Any emerging scientific issues of importance are brought to the attention of the Parties by the SAP Co-Chairs for consideration at the Meetings of the Parties (see homepage).

CO-OPERATIVE PROGRAMME FOR MONITORING AND EVALUATION OF THE LONG-RANGE TRANSMISSION OF AIR POLLUTANTS IN EUROPE (EMEP)

Convention on Long-Range Transboundary Air Pollution (CLRTAP)

<http://www.emep.int>

To provide sound scientific support to the Convention, in particular in the areas of: atmospheric monitoring and modeling, emission inventories and emission projections, and integrated assessment; to inform policy developments under the Convention [42]

**ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION | HOMEPAGE |
MANDATE OF THE SPI BODY**

WORKING GROUP ON EFFECTS (WG EFFECTS)

Convention on Long-Range Transboundary Air Pollution (CLRTAP)

<https://www.unece.org/environmental-policy/conventions/envlrtapwelcome/convention-bodies/working-group-on-effects.html>

To develop the necessary international cooperation in the research on and the monitoring of pollutant effects; to provide information on the degree and geographic extent of the impacts of major air pollutants on human health and the environment; to identify the most endangered areas, ecosystems and other receptors by considering damage to human health, terrestrial and aquatic ecosystems and materials (see homepage).

**PROTOCOL ON POLLUTANT RELEASE AND TRANSFER REGISTERS, A.K.A. KIEV PROTOCOL
(PROTOCOL ON PRTRS)¹**

Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention)

<https://www.unece.org/env/pp/prtr.html>

Mandate of the Protocol (see note 1): To enhance public access to information through the establishment of coherent, integrated, nationwide pollutant release and transfer registers (PRTRs) in accordance with the provisions of this Protocol, which could facilitate public participation in environmental decision-making as well as contribute to the prevention and reduction of pollution of the environment (Article 1)

SUB-COMMITTEE OF EXPERTS ON THE GHS (SCE GHS)

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

<https://www.unece.org/trans/main/dgdb/dgsubc4/activities.html>

To act as custodian of the GHS, managing and giving direction to the harmonization process; to keep the system up to date, considering the need to introduce changes to ensure its continued relevance and practical utility, and determining the need for and timing of the updating of technical criteria; to promote understanding and use of the system and encourage feedback; to make the system available for worldwide use and application; to make guidance available on the application of the system, and on the interpretation and use of technical criteria to support consistency of application; to prepare work programmes and submit recommendations to the Committee on the Transport of Dangerous Goods and the Globally Harmonized System of Classification and Labelling of Chemicals (CETDGGHS) (Resolution 1999/65 as in E/1999/INF/2/Add.3; ST/SG/AC.10/30/Rev.4)

**ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION | HOMEPAGE |
MANDATE OF THE SPI BODY**

ASSOCIATED WITH MEAS

GLOBAL MERCURY PARTNERSHIP (GMP)

United Nations Environment Programme (UNEP), Chemicals and Health Branch

<https://web.unep.org/globalmercurypartnership/#parentHorizontalTab2>

To protect human health and the global environment from the release of mercury and its compounds by minimizing and, where feasible, ultimately eliminating global, anthropogenic mercury releases to air, water and land (UNEP Governing Council 25/5).

PCB ELIMINATION NETWORK (PEN)

UNEP, Chemicals and Health Branch

<http://chm.pops.int/Implementation/IndustrialPOPs/PCBs/PCBEliminationNetwork/PENOverview/tabid/438/Default.aspx>;
<https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/persistent-organic-pollutants/pcb-elimination-network>

To prepare a progress report on the work and future plans of the PEN for the United Nations Environment Assembly (UNEA), the Basel and Stockholm COPs (Decision SC-4/9 and Decision SC-5/7 of the COP to the Stockholm Convention).

GLOBAL ALLIANCE FOR THE DEVELOPMENT AND DEPLOYMENT OF PRODUCTS, METHODS AND STRATEGIES AS ALTERNATIVES TO DDT FOR DISEASE VECTOR CONTROL (DDT ALLIANCE)

UNEP, Chemicals and Health Branch

<http://chm.pops.int/Implementation/PesticidePOPs/DDT/GlobalAlliance/tabid/621/mctl/ViewDetails/EventModID/1421/EventID/136/xmid/6821/Default.aspx>

To strengthen the base of knowledge available to inform policy formulation and decision making; to overcome the complexity and cost of deploying alternatives to DDT; to make available new alternative vector control chemicals; to develop non-chemical products and approaches for vector control (Decision SC-4/2 and Decision SC-5/6 of the Conference of the Parties to the Stockholm Convention).

NOT DIRECTLY ASSOCIATED WITH MEAS

ADVISORY GROUP ON THE ENVIRONMENTAL EXPOSURE AND IMPACT OF ENDOCRINE DISRUPTING CHEMICALS (EDC AG)

UNEP, Chemicals and Health Branch

<https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/advisory-group-endocrine-disrupting>

To provide strategic and policy advice on approaches related to the implementation of UN Environment's activities concerning environmental exposure and impact of Endocrine Disrupting Chemicals (EDCs) (see homepage).

GLOBAL CHEMICALS OUTLOOK (GCO)"

UNEP, Chemicals and Health Branch

<https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/policy-and-governance/global-chemicals-outlook>

Global Chemicals Outlook II: To continue work on the Global Chemicals Outlook, particularly in areas where data were found to be lacking or inadequate, and to enhance transparency through regionally balanced stakeholder involvement, inter alia, with a view to developing in the future a tool for assessing progress towards the achievement of the sound management of chemicals and hazardous wastes, including the existing 2020 goal, taking into account and building upon other existing sources of information. (UNEA-2, via Resolution 2/7 and United Nations Environment Programme's Governing Council decision 27/12).

ENVIRONMENT, HEALTH AND SAFETY (EHS) DIVISION

Organisation for Economic Co-operation and Development (OECD)

<http://www.oecd.org/env/ehs/organisationoftheenvironmenthealthandsafetyprogramme.htm>

Chemicals Committee: To provide a forum for co-operation between those countries wishing jointly to carry out work to develop and harmonize practices in order to improve the management of chemicals. The mission is to contribute to green growth and sustainable development by protecting human health and the environment from the risks of chemicals, preventing the creation of non-tariff barriers to trade, saving costs to countries participating in the Programme and industry, and promoting harmonization among countries participating in the Programme of their chemicals management systems (Decision of the Council [C(2016)3 and C/M(2016)8, item xx]) [43].

**ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION | HOMEPAGE |
MANDATE OF THE SPI BODY**

CHEMICAL RISK ASSESSMENT NETWORK (CRAN)

World Health Organization (WHO)

<https://www.who.int/ipcs/network/en/>

To provide a forum for scientific and technical exchange, facilitate and contribute to capacity building, promote best practices and the harmonization of methodologies, assist in the identification of research needs and promote the application of new science in risk assessment practices, assist in the identification of emerging risks to human health from chemicals, share information about work programmes to avoid duplication of effort, and upon request, assist WHO in the development of training and other materials in support of the above (see homepage).

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY (IPCS)

WHO

<https://www.who.int/ipcs/en/>

To conduct evaluations of risks posed by priority chemicals to human health and environmental integrity, to establish the scientific basis for the safe use of chemicals by means of health and environmental risk assessment (normative functions) and to strengthen national capabilities (technical cooperation) to respond to chemical emergencies and deal with the harmful effects of exposure to chemicals (resolutions WHA30.47, WHA31.28 and EB63.R19).

JOINT EXPERT COMMITTEE ON FOOD ADDITIVES (JECFA)

Food and Agriculture Organization (FAO)/WHO

https://www.who.int/foodsafety/areas_work/chemical-risks/jecfa/en/;
<http://www.fao.org/food/food-safety-quality/scientific-advice/jecfa/en/>

To evaluate the safety of food additives and contaminants, naturally occurring toxicants and residues of veterinary drugs in food [44].

JOINT MEETING ON PESTICIDE RESIDUES (JMPR)

FAO/WHO

https://www.who.int/foodsafety/areas_work/chemical-risks/jmpr/en/;
<http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/jmpr/en/>

To conduct scientific evaluations of pesticide residues in food, to provide advice on the acceptable levels of pesticide residues in food moving in international trade, to review analytical aspects of pesticides, to review toxicological data and estimate acceptable daily intakes (ADIs) for humans of the pesticides under consideration (see homepages).

**ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION | HOMEPAGE |
MANDATE OF THE SPI BODY**

PANEL OF EXPERTS ON PESTICIDE MANAGEMENT (JMPM)

FAO/WHO

<http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/panelcode/zh/>

To discuss and strengthen particular areas of pesticide management; to advise FAO and WHO on the implementation of the FAO/WHO International Code of Conduct on Pesticide Management and on matters pertaining to pesticide regulation and management, alerting them to new developments, problems or issues that merit attention (see homepage).

UNITED NATIONS INSTITUTE FOR TRAINING AND RESEARCH (UNITAR)

UNITAR

<https://unitar.org/cwm/>

To provide support to governments and stakeholders to strengthen their institutional, technical, and legal infrastructure and capacities for sound management of chemicals (see homepage).

SCIENTIFIC AND TECHNICAL ADVISORY PANEL (GEF STAP)

Global Environment Facility (GEF)

<http://www.stapgef.org>

To provide the GEF with scientific and technical advice on policies, operational strategies, programs and projects, to review the scientific and technical rationale of GEF full-sized projects coming into the pipeline at concept stage and to report on this to the GEF Council, to develop advice on future program strategies and reports to the GEF Assembly (Paragraph 11 of the Instrument for the Establishment of the Global Environment Facility and personal communication).

INTERNATIONAL RESOURCE PANEL (IRP)

UNEP

<http://www.resourcepanel.org>; <http://www.resourcepanel.org/policies-and-procedures-irp>

To prepare independent, coherent and authoritative scientific studies and assessments of policy relevance on the sustainable use and management of natural resources and in particular their environmental impacts over the full life cycle, to inform international policy discourse and development on emerging challenges and opportunities for the sustainable use, management of and equitable access to natural resources (see homepage).

**ASSOCIATED MEA / HOST ORGANIZATION / SPONSORING ORGANIZATION | HOMEPAGE |
MANDATE OF THE SPI BODY**

**JOINT GROUP OF EXPERTS ON THE SCIENTIFIC ASPECTS OF MARINE ENVIRONMENTAL PROTECTION
(GESAMP)**

IMO (host), FAO, UNESCO/IOC, WMO, IAEA, UNEP, UNIDO, UNDP, ISA

<http://www.gesamp.org>

As a mechanism for coordination and collaboration among ten UN organizations, to conduct and support marine environmental assessments; to undertake in-depth studies, analyses, and reviews of specific topics; and to identify emerging issues regarding the state of the marine environment (see homepage).

INTERNATIONAL PANEL ON CHEMICAL POLLUTION (IPCP)

IPCP

<https://www.ipcp.ch>

To initiate, prepare and disseminate condensed state-of-the-science documentation on all aspects of environmentally relevant chemicals, to act internationally and in countries with particular needs for improving knowledge regarding chemicals for them to manage issues related to chemicals, to offer the scientific expertise accumulated within IPCP to international organizations, national governments and other parties for discussions and review of all aspects of the scientific basis for regional and/or global management of chemicals (see homepage).

ARCTIC MONITORING AND ASSESSMENT PROGRAMME (AMAP)

Arctic Council

<https://www.amap.no>

To monitor and assess the status of the Arctic region with respect to pollution and climate change issues, to document levels and trends, pathways and processes, and effects on ecosystems and humans and propose actions to reduce associated threats for consideration by governments, and to produce sound science-based, policy-relevant assessments and public outreach products to inform policy and decision-making processes (see homepage).

- I. The Protocol on PRTRs does not have its own distinct SPI body but UNECE's work on the Protocol does encompass various activities at the science-policy interface.
- II. The Global Chemicals Outlook is not technically an SPI body but rather a process. However, due to its importance for the field of international chemicals management, it is included in this mapping and gap analysis report.



3. DESIRED OBJECTIVES AND FUNCTIONS OF A STRONG, TWO-WAY SCIENCE-POLICY INTERFACE

3.1 DESIRED OBJECTIVES AND FUNCTIONS

Based on the input from experts during and after the November 2018 workshop, a list of desired objectives and functions of a strong, two-way science-policy interface in international chemicals governance was compiled. In particular, the identified objectives (in the following list) and functions (in Table 4) help to describe an ideal, strong two-way science-policy interface. They serve as a reference against which to compare existing science-policy interface bodies and thus help to understand the gaps in, or limitations of, the current science-policy interface landscape. The desired objectives of an ideal science-policy interface include the following:

- 1) **Scientific assessment:** to provide rigorous, authoritative assessments that collect, digest and process fragmented pieces of scientific information on specific issues into a comprehensive, yet easily accessible format for policy-makers. These assessments should help to reduce the complexity and ambiguity of such scientific information for non-experts and to raise policy-makers' confidence and trust in using such scientific evidence;
- 2) **Awareness raising:** to raise awareness of chemicals and waste issues among policy-makers and the general public;
- 3) **Ownership and buy-in:** to increase governmental ownership and stakeholder buy-in of final products (e.g. scientific assessments) through early involvement in the development process;
- 4) **Scientist participation:** to enable scientists to better understand and be confident in their roles, to be aware of opportunities to be involved, and to understand the specific needs, languages and dynamics (e.g. timelines and key actors) of policy processes in order to participate more effectively in them;

- 5) **Knowledge base:** to provide a reference point for stakeholders/governments to locate and gain access to specific information; to provide a (centralized) location to facilitate updating of the knowledge base in a timely manner as changes occur in the rapidly developing, often cross-cutting chemical landscape;
- 6) **Future generations:** to raise the profile of and demand for relevant natural and social science disciplines at universities, not only to create incentives for scientists to participate in policy processes in addition to their research work, but also to keep these disciplines attractive for future generations of students; and
- 7) **Scientific consensus:** to build and communicate, scientific consensus on chemicals issues, while ensuring that the work toward consensus does not preclude timely action (e.g. in consideration of the precautionary principle, a focus on consensus should not delay action).

Table 4. Identified functions of a strong, two-way science-policy interface and the objectives they address

FUNCTION	DESCRIPTION	OBJECTIVES ADDRESSED
SCIENCE TO POLICY		
Scientific assessments and translation of scientific results for different audiences	Conducting peer-reviewed scientific assessments (including of emerging and legacy issues of concern and general chemical management issues) and translating results for different audiences (e.g. from scientific data into policy-relevant information) including in languages other than English	1: Scientific assessment, 5: Knowledge base
Monitoring and assessment of progress	Monitoring and assessment of progress in the implementation and/or of the effectiveness of relevant measures	1: Scientific assessment, 5: Knowledge base
Early warning and horizon scanning	Early warning and horizon scanning to identify issues of concern as they arise, with outcomes brought to the attention of policy communities	1: Scientific assessment, 5: Knowledge base
Overview of the chemicals field	Providing an overview of the chemicals field, rather than just of individual issues	5: Knowledge base
Reducing scientific uncertainty and reaching scientific consensus	Contributing to reducing scientific uncertainty and to reaching scientific consensus, but also recognizing that uncertainty is inherent to scientific data, and timely policy action should be ensured despite this uncertainty	7: Scientific consensus

FUNCTION	DESCRIPTION	OBJECTIVES ADDRESSED
Integration of science from different fields (e.g. human health and the environment as well as labor and agriculture)	Integration of science from different fields (e.g. human health and the environment as well as labor and agriculture)	1: Scientific assessment, 5: Knowledge base, 6: Future generations
BETWEEN SCIENCE AND POLICY		
Facilitation of communication between scientists and policy-makers	Ensuring and facilitating communication between scientists and policy-makers (as well as with the public) when needs arise, including the organization of conferences to address knowledge gaps	2: Awareness raising, 3: Ownership, buy-in, 4: Scientist participation, 6: Future generations
Contextualization	Collecting, reviewing, digesting, synthesizing and translating i) specific policy needs/questions into research questions and ii) scientific information into actionable information for policy-makers	1: Scientific assessment, 2: Awareness raising, 3: Ownership, buy-in, 4: Scientist participation, 6: Future generations
Knowledge management	Providing knowledge management (including capacity building) to ensure easy accessibility to the extensive range of existing information and knowledge (including on the local level), including options for the context-specific prioritization of data for different communities/countries	5: Knowledge base
Capacity-building	Capacity-building for i) scientists to allow them to propose/understand policies, to participate in the policy and science-policy sphere; nurturing the next generation of scientists and ii) policy-makers to allow them to understand scientific processes, including timescales for data production, scientific jargon, the limits of scientific knowledge (e.g. uncertainty), and the specific needs of the scientific community, etc.	1: Scientific assessment, 4: Scientist participation, 6: Future generations
POLICY TO SCIENCE		
Inform scientists about policy developments	Inform scientists about new policies and regulations, ongoing policy debates and other developments in the policy sphere	4: Scientist participation, 6: Future generations
Coordinate scientific inputs in response to policy calls	Coordinate scientific inputs for calls from the policy sphere for information/evidence	4: Scientist participation, 6: Future generations



4. UNDERSTANDING THE CURRENT STATE OF THE SCIENCE-POLICY INTERFACE

4.1 KEY FINDINGS FROM THE MAPPING ANALYSIS

Finding A: Multiple science-policy interfaces

General findings: A wide range of science-policy interface bodies of varying types, sizes and purposes already exist on the global, inter-regional, regional, national and local levels (for examples, see Table 5). They have, to a certain extent, informed decision/policy-making, raised awareness of chemicals and waste, and assisted in the implementation of actions. The specific findings are as follows:

Finding A.1: The existing landscape of science-policy interface bodies and interactions provides an important basis that can be built upon and strengthened.

Finding A.2: Many existing science-policy interface bodies have been established either under a legally-binding instrument (e.g. the MEAs, the European Chemicals Regulation – REACH) with specific mandates to assist the implementation of such instruments, or by an organization on a legally-binding or non-legally-binding basis with varied mandates.

Finding A.3: The variety of the many existing science-policy interface bodies derives in part from past and ongoing common practice within chemicals management of addressing specific issues by establishing institutions on an ad hoc basis as they emerge, i.e. in a rather reactive manner. Recently, other types of interface bodies (e.g. WHO Chemical Risk Assessment Network, IPCP, AMAP) have also been established to address chemicals and waste in a proactive manner. Much of this variety is, however, likely to be inherent, given the complexity of governance arrangements, the multiple levels of governance, the broad range of sectoral interests and the variety of purposes.

TABLE 5. A non-exhaustive list of existing science-policy interface bodies in chemicals management categorized by scale and hosting institution

GLOBAL	Under the MEAs (MEAs in brackets) OEWG (Basel Convention), CRC (Rotterdam Convention), POPRC (Stockholm Convention), SAP (Montreal Protocol)
	Established/hosted by intergovernmental/international non-governmental organizations (hosting organizations in brackets) IGOs: JMPM (FAO/WHO), GMP (UNEP), EDC AG (UNEP), CRAN (WHO), IRP (UNEP), GESAMP (10 UN sponsoring organizations), GEF STAP (GEF) International NGOs: IPCP, Endocrine Society, International Science Council
INTER-REGIONAL	Under the MEAs EMEP and WG Effects (CLRTAP), SCE GHS (GHS)
	Established/hosted by intergovernmental/international non-governmental organizations OECD EHS Programme
REGIONAL	Under regulations/legislations Committee for Risk Assessment and Socio-Economic Assessment Committee (RAC and SEAC) to the European Chemicals Agency, Basel and Stockholm Convention Regional Centers
	Established/hosted by intergovernmental/international non-governmental organizations AMAP (Arctic Council), Africa Institute, European Joint Research Centre, European Commission Science Hub, Scientific Committees and Panels to the European Food Safety Authority, Thematic Working Group on Chemicals under the Asia Pacific Regional Forum on Health and Environment, ASEAN Technical Working Group on Chemicals and Waste
NATIONAL	Established/hosted by intergovernmental organizations / national governments National Cleaner Production Centres (NCPs), Hazardous Substances Advisory Committee (HSAC) to the UK Government
	Established/hosted by non-governmental organizations Scientific and professional societies in various countries such as the American Chemical Society (ACS) and Royal Society of Chemistry (RSC)
LOCAL	Great Lakes Commission, C8 Science Panel

4.2 KEY FINDINGS FROM THE GAP ANALYSIS

Finding B: Scope of the science-policy interface bodies

Guiding questions used in the analysis: Which chemicals (or groups of chemicals) and stage(s) of the chemical lifecycle are covered by the science-policy interface bodies? What are their protection goals (the environment or human health)? Are general chemical management issues addressed by the interface bodies in addition to the chemicals (or groups of chemicals) themselves?

General findings: A broad range of chemicals and groups of chemicals along different stages of their life cycles, as well as their impacts on the environment and or human health, are unequally covered by different numbers of existing interface bodies. In addition, some interface bodies also address generic chemical management issues that may be applicable to a larger set of chemicals than they themselves cover, whereas others do not. In general, interface bodies under, or associated with, MEAs have a specific scope, whereas many interface bodies with no direct association to MEAs are often flexible and can theoretically cover any chemicals and any generic chemical management issues, subject to their work areas, resources and capacity. The specific findings are as follows:

Finding B.1: Existing science-policy interface bodies cover a broad range of chemicals and groups of chemicals along different stages of the chemical life cycle (see Tables 6 and 7).

In particular, interface bodies under the MEAs generally cover only chemicals and groups of chemicals that are specifically defined in the respective MEAs (with the exception of UNECE's work on the Protocol on PRTRs and the Sub-Committee of Experts on the GHS, as their associated frameworks intend to address chemical management issues, i.e. reporting, and classification and labeling, respectively, rather than specific chemicals or groups of chemicals). Currently, interface bodies under the MEAs cover only a limited set of chemicals. However, it can be possible to extend the chemical scope of these interface bodies when the Parties of the MEAs agree. For example, hydrofluorocarbons (HFCs) are not ozone depleting substances, but are replacements of ozone depleting hydrochlorofluorocarbons (HCFCs). Due to their strong greenhouse gas effects, they were included in the scientific assessment by the SAP of the Montreal Protocol.

Similarly, interface bodies established or hosted by intergovernmental and international non-government organizations can be categorized into two groups: (1) interface bodies with a focus on pre-defined chemicals or groups of chemicals (e.g. Global Mercury Partnership, PCB Elimination Network, FAO/WHO JMPM) and (2) interface bodies with flexible mandates that can theoretically address any chemicals or groups of chemicals, subject to their work areas, resources and capacity (e.g. WHO Chemical Risk Assessment Network, OECD EHS Division, GEF STAP, IPCP).

Furthermore, most science-policy interface bodies cover all life cycle stages of a chemical, whereas several bodies, particularly those under the MEAs, focus on only one part of the life cycle. In addition, most science-policy interface bodies aim to protect both the environment and human health, whereas only a few aim to specifically protect either the environment or human health, due to the nature of the chemicals that they tackle (e.g. SAP) or the mandate of the host organization (e.g. WHO).

Finding B.2: The varying degree of coverage of certain chemicals or groups of chemicals by the different interface bodies can be explained by 1) different levels of knowledge availability (i.e. certain chemical and waste issues are not well, or only recently, recognized as requiring policy action and are therefore only addressed by one or two interface bodies) and 2) the historic development of the science-policy institutional landscape (i.e. several interface bodies may specialize in different aspects/life cycle stages of a chemical, e.g. in the case of the Basel, Rotterdam and Stockholm Convention and their subsidiary interface bodies).

Finding B.3: In addition to addressing certain chemicals, several interface bodies also address generic chemical management issues that may be applicable to a larger set of chemicals (e.g. information exchange on emissions and mitigation strategies, risk reduction and communication).

Finding B.4: Some interface bodies deal with legacy environmental and health issues, such as the PCB Elimination Network and DDT Alliance, but it is likely that not all legacy issues are addressed by a dedicated body. Legacy issues are important and need to be considered more extensively.

TABLE 6. Overview of existing science-policy interface bodies analyzed and the chemical scope that they cover. Unlimited = able to cover all chemicals; GHG = greenhouse gas; ODS = ozone depleting substances; POPs = persistent organic pollutants; EDCs = endocrine disrupting chemicals; PPCPs = pharmaceuticals and personal care products; PFASs = per- and poly-fluoroalkyl substances; PAHs = polycyclic aromatic hydrocarbons; PBT = persistent, bioaccumulative and toxic chemicals, PCBs = polychlorinated biphenyls

CHEMICAL SCOPE														
SPI BODY	Unlim- ited	Air pol- lutants	GHGs	ODS	POPs	EDCs	PPCPs	Pesti- cides	PFASs	PAHs	Nano- materials	Metals and met- alloids	Radio- nuclides	Others
Under MEAs														
BASEL OEWG ^I				●	●			●	●			●		PBTs
CRC ^{II}					●			●				● (mercury)		●
POPRC					●									
SAP ^{III}				●										●
EMEP ^{IV}		●	●		●			●		●		● (heavy metals)		●
CLRTAP WG EFFECTS ^{IV}		●	●		●			●		●		● (heavy metals)		●
PROTOCOL ON PRTRS ^V	●	●	●		●	●		●		●		● (heavy metals)		●
SCE GHs	●													

SPI BODY	CHEMICAL SCOPE													
	Unlim- ited	Air pol- lutants	GHGs	ODS	POPs	EDCs	PPCPs	Pesti- cides	PFASs	PAHs	Nano- materials	Metals and met- alloids	Radio- nuclides	Others
Associated with MEAs														
GMP												● (mercury)		
PEN					● (PCBs)									
DDT ALLIANCE					● (DDT)									
Not directly associated with MEAs														
UNEP EDC AG						●								
GCO	●													
OECD EHS ^{vi}	●													
WHO CRAN	●													
WHO IPCS	●													
FAO/WHO JECFA ^{vii}														●
FAO/WHO JMPR ^{viii}								●						
FAO/WHO JMPM								●						
UNITAR					●						●	● (mercury)		

SPI BODY	CHEMICAL SCOPE													
	Unlim- ited	Air pol- lutants	GHGs	ODS	POPs	EDCs	PPCPs	Pesti- cides	PFASs	PAHs	Nano- materials	Metals and met- alloids	Radio- nuclides	Others
GEF STAP ^{ix}					●	●	●				●	●		●
IRP ^x												●		●
GESAMP ^{xi}														●
IPCP	●													
AMAP ^{xii}		●	●		●							● (heavy metals)	●	●

- I. Upon becoming waste, in accordance with the Annexes to the Basel Convention
- II. CRC addresses pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by two or more Parties. The full list of 50 chemicals is listed in Annex III of the Rotterdam Convention, see [45].
- III. Others = substances of special interest to the Parties (e.g. N2O, substitutes to ODS such as HFCs).
- IV. Air pollutants = all those covered by the seven substantive protocols to the Convention, namely: sulfur, ground-level ozone precursors (nitrogen oxides, volatile organic compounds), POPs, heavy metals, ammonia, and particulate matter (including black carbon).
- V. Under the Protocol, “pollutant” is defined as a substance or a group of substances that may be harmful to the environment or to human health on account of its properties and of its introduction into the environment. For the full list of 86 chemicals and groups of chemicals listed, see Annex II of the Kiev Protocol [46].
- VI. The OECD EHS Division addresses all types of chemicals except pharmaceuticals and veterinary medicines.
- VII. Others = Food additives, contaminants, naturally occurring toxicants and residues of veterinary drugs in food.
- VIII. Pesticide residues
- IX. Metals and metalloids = arsenic, mercury, cadmium, organotin, lead in paints. Others = all chemicals relevant to the GEF including those that are relevant to SAICM and plastics
- X. Others = Natural Resources: biomass (wood, crops, including food, fuel, and feed, and plant-based materials), fossil fuels (coal, gas, and oil), metals (such as iron, aluminum, and copper), non-metallic minerals (including sand, gravel, and limestone), water, and land
- XI. Others = harmful substances carried by ship and as requested, particularly by the IMO, see [47].
- XII. Others = chemicals of emerging Arctic concern, see [48].

Table 7. Overview of existing science-policy interface bodies analyzed and the life cycle stages, chemical management issues and protection goals they consider.

SPI BODY	CHEMICAL LIFE CYCLE STAGE CONSIDERED						GENERAL CHEMICAL MANAGEMENT ISSUES	PROTECTION GOALS			
	Production and pack-aging	Transport and storage	Trade	Use	Reuse, recycling and recovery	Disposal		Environment	Human health	Other	
Under MEAs											
BASEL OEWG ⁱ					●	●	●	No	●	●	
CRC			●					Yes - Prior Informed Consent Procedure	●	●	
POPRC	●	●	●	●				No	●	●	
SAP ⁱⁱ	●			●				No	●		
EMEP	●	●	●	●	●		●	Yes – Information exchange on pollutant emissions and mitigation strategies	●	●	Materials (e.g. monuments, cultural heritage)
CLRTAP WG EFFECTS		●	●	●	●		●		●	●	
PROTOCOL ON PRTRS ⁱⁱⁱ	●	●	●	●	●		●	Yes – Pollutant release and transfer registers	●	●	
SCE GHS	Not applicable							Yes – Labeling and classification, hazard communication	●	●	
Associated with MEAs											
GMP	●	●	●	●	●		●	No	●	●	
PEN	●	●	●	●	●		●	No	●	●	
DDT ALLIANCE	●	●	●	●	●		●	Yes – Development of safer alternatives to DDT for vector control	●	●	

SPI BODY	CHEMICAL LIFE CYCLE STAGE CONSIDERED						GENERAL CHEMICAL MANAGEMENT ISSUES	PROTECTION GOALS		
	Production and pack-aging	Transport and storage	Trade	Use	Reuse, recycling and recovery	Disposal		Environment	Human health	Other
Not directly associated with MEAs										
UNEP EDC AG	●	●	●	●	●	●	No	●	●	
GCO	●	●	●	●	●	●	Yes – e.g. chemical testing, risk reduction, assessment of alternatives, innovation, business models, economic incentives, reform of chemistry curricula	●	●	
OECD EHS	●	●	●	●	●	●	Yes – Information exchange along the value chain	●	●	
WHO CRAN ^{III}	●	●	●	●	●	●	Yes – Risk assessment methodologies; develop-ment of IOMC toolbox		●	
WHO IPCS ^{IV}	●	●	●	●	●	●	Yes – development of IOMC toolbox		●	
FAO/WHO JECFA				●			Yes – development of principles for evaluating safety and quantify-ing risk of products		●	
FAO/WHO JMPR			●	●			Yes – e.g. performing risk assessments on pesti-cide residues in food		●	
FAO/WHO JMPM ^V	●	●	●	●	●	●	Yes – e.g. guidelines on registration of pesticides, compliance and enforce-ment of pesticide regulations	●	●	
UNITAR ^{VI}	●			●	●	●	Yes – e.g. waste manage-ment, pollution release and transfer registers	●	●	
GEF STAP	●	●	●	●	●	●	Yes – e.g. the publication “Emerging Chemicals Management Issues in Developing Countries and Eco-Countries with Eco-nomics in Transition”	●	●	

SPI BODY	CHEMICAL LIFE CYCLE STAGE CONSIDERED						GENERAL CHEMICAL MANAGEMENT ISSUES	PROTECTION GOALS		
	Production and pack-aging	Transport and storage	Trade	Use	Reuse, recycling and recovery	Disposal		Environment	Human health	Other
<i>IRP</i>	●	●	●	●	●	●	No	●	●	
<i>GESAMP</i>				●	●	●	No	●	●	
<i>IPCP</i>	●	●	●	●	●	●	Yes – e.g. IPCP assisted UNEP Chemicals and Health Branch in projects on Chemicals in Products	●	●	
<i>AMAP</i> ^{vii}		●		●	●	●	Yes – Convention effectiveness evaluations and review processes: risk communication on human health issues	●	●	

- I. also including transport and storage as well as trade of hazardous waste
- II. also including emissions in whichever stage of the chemical life cycle they occur
- III. also including exposure to chemicals through all pathways and routes of exposure, including in environmental media (air, water, soil) and food, through use of consumer products, in occupational settings, etc.
- IV. also including exposure to chemicals through all pathways and routes of exposure, including in environmental media (air, water, soil)
- V. recycling: treatment and recycling or disposal of empty pesticide containers and pesticide waste
- VI. also release into the environment
- VII. also including environmental fate and transport

Finding C: Work areas at the science-policy interface

Guiding questions used for the analysis: In which work areas at the science-policy interface are the existing interface bodies active? Do the interface bodies focus on one-way or two-way interactions?

General findings: The work areas of the existing science-policy interface bodies vary (see Table 8). The majority of the considered interface bodies provide scientific support to policy-makers, particularly with regard to the scientific assessment of issues of concern, including in some cases identification of issues of concern. However, there are also certain gaps, e.g. a general lack of scientific and technical support to policy-makers in monitoring and evaluation of progress in the implementation of relevant policy measures for all chemicals (or groups of chemicals) of concern and on a planetary scale, continuing difficulties in ensuring timely scientific advice on issues of concern, and that significant amounts of existing scientific information is not synthesized and brought into forms that policy-makers can use. Furthermore, there is a relative lack of interface bodies that work toward ensuring effective communication of policy-makers' needs back to the scientific community, as well as toward ensuring communication of results and decisions made by interface bodies to national policy-makers. As a result, scientists and decision/policy-makers are not always best informed of developments and needs in the other sphere. Opportunities for synergies and joint development of strategies may then be missed and issues not addressed in the most effective and timely manner. The specific findings are as follows:

Finding C.1: Many interface bodies work to provide scientific support in assessing issues of concern and in identifying issues of concern and have thus helped to initiate and advance the response to these issues (e.g. the WHO/IPCS reports on endocrine disrupting chemicals (EDCs) in 2002 and 2012 have contributed to the adoption of EDCs as an Emerging Policy Issue under SAICM).

However, there are continuing difficulties in ensuring timely scientific advice on issues of concern, whether in response to policy-makers' requests or resulting from concerns arising from the scientific community. For example, perfluorooctanoic acid (PFOA) and perfluorohexane sulfonic acid (PFHxS) are only now being evaluated by the POPs Review Committee (PORPC) of the Stockholm Convention, despite their large-scale production and use since as early as the 1950s and a substantial body of initial evidence of concern that emerged in the late 1990s and early 2000s. Several causes for such delayed responses can include:

- i) Interface bodies under the MEAs may need a specific mandate to trigger their work (e.g. in the case of POPRC and CRC, at least one Party needs to submit a nomination proposal);
- ii) While those interface bodies that are not under, or associated with, the MEAs are not constrained by such mandates, few of them have

exercised the function of identifying issues of concern on a regular basis. One reason for this could be that the long time-scale for the development and publication of global assessments such as the Global Chemicals Outlook may impede the timely response to issues of concern to assist decision/policy-making. In addition, few interface bodies have flexible mechanisms to allow rapid and targeted assessments of issues of concern as they emerge;

- iii) Much of the existing science is not “policy-ready”, i.e. not synthesized and brought into a form that policy-makers can readily use. Taking the example of scientific data on POPs: whereas for some chemicals scientific data have been synthesized and prepared by certain Parties and the POPRC for policy-makers to list them as POPs, for other chemicals, a large body of scientific evidence may have been generated, but may still be scattered over the literature, and is therefore not in policy-ready formats for Parties to nominate them for listing.

Furthermore, for those interface bodies that are not under, or associated with, the MEAs, additional challenges or barriers exist with regard to bringing their findings to the right decision/policy-makers. For example, AMAP recently identified many chemicals of emerging Arctic concern, many of which are not covered by existing MEAs and may be produced and used in countries outside of the jurisdictions of the Arctic Council. Therefore, in order to address these chemicals of emerging Arctic concern, additional efforts to inform international policy-makers may be needed.

Finding C.2: Most of the considered interface bodies assist in identifying and assessing issues of concern, but only some of them provide additional scientific support to policy-makers in the form of monitoring and evaluation of the effectiveness of policy implementation. Progress is thus being tracked for specific topics based on the mandates of individual interface bodies, and is not being monitored at a global level. One of the reasons for the paucity of monitoring and evaluation of progress is the fragmented institutional scope of different bodies that constitute the current science-policy interface.

Finding C.3: There is a relative lack of interface bodies that work toward ensuring effective communication of policy-makers’ needs back to the scientific community (see Table 8). There is no apparent process providing common and regularly reviewed guidance on policy-oriented research priorities to ensure that the most important needs in terms of knowledge to support more effective governance at all levels are identified and responded to in a coordinated manner.

Finding C.4: In addition to traditional one-way communication, some interface bodies have also worked to facilitate two-way communication between science and policy (including developing joint strategies for co-development, capacity-building and knowledge management for both spheres; see Table 8), which are welcomed by, e.g.,

the UNEP Report “Strengthening the Science-Policy Interface: A gap analysis” [49] and can be built upon.

Finding C.5: An additional concern, as raised during the November 2018 workshop (see section 2.2), was a general lack of effective communication of outputs generated by many international science-policy interface bodies (e.g., scientific assessment reports) to national/local policy-makers. In addition, in some cases, an additional step to translate such international findings into a national/local context was missing. These factors often limit the translation of data and findings from, e.g., the Global Chemicals Outlook into national/local policies, particularly in developing and transition countries.

Table 8. Overview of the existing science-policy interface bodies analyzed in this study and their work areas.

SPI BODY	SCIENCE TO POLICY			SCIENCE-POLICY JOINT ACTIONS				POLICY TO SCIENCE		Others
	Provide scientific support in assessing substances of concern and policy implementation	Provide scientific support in monitoring and evaluating progress	Provide scientific support in (early) identification of issues of concern and inform policy-makers	Facilitate science-policy dialogue (e.g. joint strategies)	Information dissemination and knowledge management	Capacity building	Inform scientists about policy development	Coordinate scientific inputs for policy calls		
Under MEAs										
BASEL OEWG	●	●	●		●					
CRC	●									
POPRC	●		●							
SAP	●	●	●		●					
EMEP	●	●	●	●	●	●	●	●		
CLRTAP WG EFFECTS	●	●	●	●	●	●	●	●		
PROTOCOL ON PRTRS				●	●					
SCE GHS	●	●	●		●		●			
Associated with MEAs										
GMP	●		●	●		●	●	●		
PEN			●	●		●		●		
DDT ALLIANCE			●	●		●	●	●		

SPI BODY	SCIENCE TO POLICY			SCIENCE-POLICY JOINT ACTIONS			POLICY TO SCIENCE		Others
	Provide scientific support in assessing substances of concern and policy implementation	Provide scientific support in monitoring and evaluating progress	Provide scientific support in (early) identification of issues of concern and inform policy-makers	Facilitate science-policy dialogue (e.g. joint strategies)	Information dissemination and knowledge management	Capacity building	Inform scientists about policy development	Coordinate scientific inputs for policy calls	
Not directly associated with MEAs									
UNEP EDC AG	●		●	●		●		●	
GCO	●	●	●		●				
OECD EHS	●		●	●	●	●		●	●
WHO CRAN			●		●	●		●	Research
WHO IPCS	●		●	●	●			●	
FAO/WHO JECFA	●		●						
FAO/WHO JMPR	●		●						
FAO/WHO JMPM	●	●	●						
UNITAR	●	●		●		●			Research
GEF STAP	●		●	●	●			●	
IRP	●	●	●	●	●	●		●	
GESAMP	●		●					●	Research
IPCP	●	●	●	●	●	●		●	Research
AMAP	●	●	●	●	●	●		●	

Finding D: Needs of and circumstances within developing and transition countries

Guiding questions used for the analysis: Are processes or rules in place to ensure that the needs of and circumstances within developing countries and countries with economies in transition (hereafter referred to as “developing and transition countries”) are taken into account? Which challenges exist that prevent these needs from being met?

General findings: The considered interface bodies present a range of different rules and procedures for ensuring that the needs of and circumstances within developing and transition countries are taken into account. This is mostly through measures to support their participation in relevant processes/meetings (see Table 9). Exchange and mutual learning among interface bodies may help to further strengthen rules and procedures across different interface bodies and thus enhance representation and incorporation of needs of and circumstances within individual developing and transition countries at the international science-policy interface and associated work. Additional challenges to balanced and adequate involvement of developing and transition countries and representation of their needs and circumstances at the international science-policy interface include (1) lacking personnel capacity to attend meetings, (2) lacking scientific expertise and/or language literacy skills at the national level to effectively participate in relevant processes/meetings, and (3) lacking accessibility to existing scientific evidence produced on the national and local levels due to cultural, language and logistical barriers. The specific findings are as follows:

Finding D.1: Most of the interface bodies considered have explicit rules and/or procedures to ensure that the needs of and often different circumstances within developing and transition countries are taken into account, particularly through rules that stipulate co-chairpersonship of meetings, the provision of financial support to assist countries to participate in meetings, and the provision of using a language other than English at the meetings. Some interface bodies such as the POPRC have additional activities to support effective participation (for example, see [50]).

Finding D.2: Apart from rules, procedures and activities to increase participation of developing and transition countries in relevant processes, there are also other measures to ensure that the needs of and circumstances within developing and transition countries are specifically addressed. For example, the Rotterdam Convention set the rule that “a developing country or country with an economy in transition experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory may submit a proposal for listing in Annex III”; this is a direct way for developing and transition countries to put forward their own proposal to ensure that their specific situation is covered by the work program of the CRC.

Finding D.3: Several interface bodies have no specific procedures or rules in place to ensure that needs of and circumstances within developing and transition countries are taken into consideration. Additional rules and procedures in the other existing interface bodies could be introduced to ensure that these are considered.

Finding D.4: At the November 2018 workshop (see Section 2.2), experts highlighted the large discrepancy in the capacities to address chemicals-related problems between developed countries and developing and transition countries: e.g. in developed countries, capacity exists (albeit to varying degrees) to address both well-known chemicals issues and emerging issues such as nanotechnology and microplastics, whereas in many developing and transition countries, a lack of knowledge of which chemicals are present impedes these countries' abilities to address more fundamental issues, let alone emerging issues. Some of the specific challenges faced by developing and transition countries relating to the science-policy interface for chemicals management include (1) a lack of scientific experts at the national level, which makes it difficult for policy-makers to gain an adequate understanding of the relevant science, and (2) lacking capacity (specifically time and personnel) to attend international meetings (despite the awareness of and interest in participating in such meetings) [51]. Further challenges include limited English language and/or literacy skills, which restrict experts' ability to fully express themselves at international meetings, as raised by several experts from developing and transition countries at the November 2018 workshop.

Finding D.5: Expert statements at the November 2018 workshop, as well as literature research, highlighted that scientific knowledge produced in developing and transition countries is underrepresented in global assessments and generally has limited visibility in comparison to scientific knowledge produced in developed countries [52]. Part of the reason for this is that researchers in developing and transition countries often lack the capacity, confidence and support to publish in international journals. Instead, they tend to publish in local journals and often in local languages other than English, which are often not accessible from outside of the country, or in technical reports to local policy-makers only. This presents significant challenges to accessing and integrating scientific knowledge from developing and transition countries into global assessments and reviews.

Table 9. Overview of the presence (or absence) of procedures or rules by the interface bodies considered to take into account the needs of and circumstances within developing and transition countries.

SPI BODY	ARE PROCEDURES OR RULES IN PLACE TO ENSURE THAT THE NEEDS OF AND CIRCUMSTANCES WITHIN DEVELOPING COUNTRIES AND COUNTRIES WITH ECONOMIES IN TRANSITION ARE TAKEN INTO ACCOUNT?	
	Yes/No	Details
Under MEAs		
BASEL OEWG	Yes	The Secretariat ensures adequate representation of all Parties through (1) mobilizing funds for participation of developing and transition countries in meetings and (2) ensuring co-chairmanship of meeting and that sub-groups are balanced between developed and developing/transition country Parties. For the CRC, a developing country or country with an economy in transition experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory may submit a proposal for listing in Annex III. For the POPRC, the Secretariat continues activities to assist Parties that are developing and transition countries as listed in decision POPRC-4/8.
CRC		
POPRC		
SAP	Yes	The participants represent experts from both developed and developing/transition countries. Developing country experts are recognized as bringing an important perspective to the process, and their involvement has also contributed to capacity building in those regions and countries.
EMEP	Yes	All meeting sessions are held in the three official languages of UNECE (RU, EN, FR). In addition, there is a Coordinating Group for countries in Eastern Europe, the Caucasus and Central Asia that feed their views into the sessions. Delegates from these countries are supported financially to participate in the sessions and meetings under the Convention.
CLRTAP WG EFFECTS		
PROTOCOL ON PRTRS	Yes	The Parties to the Protocol shall encourage cooperation among each other and with relevant international organizations, as appropriate, to promote the provision of technical assistance to Parties that are developing countries and Parties with economies in transition in matters relating to this Protocol (Article 16 of the Protocol).
SCE GHS	No	No apparent procedures or rules. However, one of the functions in the Sub-Committee's mandate is to make the system available for worldwide use and application. Although not a part of the Sub-Committee, the UNITAR/ILO/IOMC GHS Capacity Building Programme is developing partnership activities and providing support to assist countries in developing and implementing the GHS. A few developing and transition countries are member states of the body.

SPI BODY	ARE PROCEDURES OR RULES IN PLACE TO ENSURE THAT THE NEEDS OF AND CIRCUMSTANCES WITHIN DEVELOPING COUNTRIES AND COUNTRIES WITH ECONOMIES IN TRANSITION ARE TAKEN INTO ACCOUNT?	
	Yes/No	Details
Associated with MEAs		
GMP	No	No apparent procedures or rules.
PEN	Yes	Among its 19 members, the PEN Advisory Committee includes two representatives from each of the five UN Regions including regions with developing and transition countries.
DDT ALLIANCE	Yes	The composition of the Steering Committee is chosen with due consideration of malaria endemic countries (many of which are developing and transition countries).
Not directly associated with MEAs		
UNEP EDC AG	Yes	The Advisory Group on EDCs includes representatives from developing and transition countries. The Resolution adopted at ICCM4 invited UNEP and the WHO to address the needs identified by developing and transition countries by generating and disseminating information on EDCs.
GCO	Yes	To support the GCO work, UN Environment established a regionally balanced multi-stakeholder and intersectoral Steering Committee to ensure that regional (including from developing and transition countries) and sectoral concerns and perspectives are well reflected in the development of the report and particularly in the thematic review papers and the summary for policy-makers. The GCO II will address a range of chemicals and waste management issues that are of particular relevance to specific regions or countries. In addition, a regional contextualization process will be conducted to ensure the integration of the regional perspectives into the assessment and on the provision of policy options and insights.
OECD EHS	Yes	The Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology has an active strategy to involve Partner Countries in its work to ensure that the tools developed are relevant to developing and transition countries. This is anchored in a resolution by OECD Council on the implementation of SAICM.
WHO CRAN	Yes	WHO will work to ensure that each Network meeting provides a balance of views from different geographical regions and interests. The Network is intended to include participants from countries of all economic status, from the least developed to those with middle and high incomes.

SPI BODY	ARE PROCEDURES OR RULES IN PLACE TO ENSURE THAT THE NEEDS OF AND CIRCUMSTANCES WITHIN DEVELOPING COUNTRIES AND COUNTRIES WITH ECONOMIES IN TRANSITION ARE TAKEN INTO ACCOUNT?	
	Yes/No	Details
WHO IPCS	Yes	Expert meetings convened by IPCS are subject to WHO regulations which require that, as far as practicable, membership should have equitable geographical representation, gender balance and balance of experts from developed and developing countries.
FAO/WHO JECFA, JMPR, JMPM	Yes	The selection process for experts respects FAO and WHO policies on regional representation.
UNITAR	Yes	UNITAR's chemicals work predominantly involves project-based work at the national level, often in developing and transition countries. The concerns of local stakeholders are sought out and carefully considered before measures are developed.
GEF STAP	Yes	The GEF funds projects mainly in developing and transition countries. STAP-GEF ensures that all its outputs and recommendations are relevant to developing and transition countries.
IRP	Yes	The Panel has two Co-Chairs, one from a developed country and one from a developing country. To ensure developing country participation, funding for the participation of Steering Committee members from developing countries in IRP meetings and events is provided by the Secretariat. Rules also stipulate that Steering Committee members from non-OECD countries shall strive to provide annual financial or in-kind contributions to the IRP in accordance with their capacities (rather than a requirement for participation). Biannual meetings of the IRP are held on a rotating basis between developed and developing countries.
GESAMP	Yes	GESAMP seeks regional nominations of members for its Pool of Experts, and 9 out of its 17 current members are from developing countries. However, no official procedures or rules regarding regional representation were identified in the public domain.
IPCP	Yes	The IPCP includes and is open to membership from academic scientists of all countries; all members have equal voting rights in the General Assembly that governs IPCP's activities. Projects for capacity building specifically in developing and transition countries such as Armenia and Ghana have been conducted.
AMAP	Yes	Not independently, however joint work with e.g. UN Environment does address such needs.

Finding E: Networking, coordination and knowledge-sharing among interface bodies

Guiding questions used for the analysis: Is there communication, coordination and knowledge-sharing with other interface bodies? Does the interface body actively expand its network? Does it reach out to universities?

General findings: Several mechanisms exist to improve the coordination of the many and diverse science-policy interface bodies under the MEAs (e.g. the synergy process under the BRS Conventions) and by intergovernmental organizations (e.g. IOMC) (see examples in Table 10). However, there is still significant room to build on existing experiences and achieve better coordination between and across global and regional interface bodies and associated processes to strengthen synergies and avoid duplication of efforts. Similarly, an extensive knowledge base exists to support policy-making in each of the many science-policy interface bodies and is made to a certain extent publicly available via their own websites. However, locating such knowledge as well as information on the underlying frameworks, methodologies and processes can often be challenging. In addition, in certain cases, knowledge related to the different aspects of a specific issue may also be presented scattered over the websites of several bodies. These challenges generally limit the effective utilization of existing knowledge. A centralized knowledge base (or rather a centralized repository of links to existing knowledge bases generated by different interface bodies, i.e. a search engine specialized for chemicals and waste) for sharing knowledge, frameworks, methodologies and processes may be helpful. The specific findings are as follows:

Finding E.1: There are numerous collaboration and coordination efforts among different existing interface bodies (see examples in Table 10). Despite the non-exhaustive nature of this summary of links between interface bodies, the distribution of these efforts appears to be rather uneven: some interface bodies are connected more to certain interface bodies (e.g. AMAP, GEF STAP, GHS SCE) than to others. There is a general lack of coordination across all interface bodies (e.g., by one body) to allow for basic exchange of information and cooperative actions (e.g. joint creation of knowledge to the best possible extent) as well as to avoid the duplication of work. Thus, more coherent coordination of different interface bodies within and across their various work areas has significant potential to improve the effectiveness of the science-policy interactions within the existing interface bodies. These could benefit from, e.g., utilizing existing network structures and integrating elements such as cooperative research strategies, models and scenarios, assessments, knowledge-brokering and capacity-building.

Finding E.2: According to the (still limited) dataset describing the active expansion of interface bodies' networks (see Table 11), all of the interface bodies for which information is available do actively seek out new partners or members, and thus expand their

network. Some interface bodies were identified that actively reach out to academic institutions such as universities, whereas others do not actively reach out but are open to new members from academia (see Table 11). More data are needed to investigate whether outreach to academic institutions – an important means of communicating the needs of policy-makers to the scientific community (see Finding C.3) – is adequate within the current institutional landscape.

Finding E.3: While progress has been made, significant barriers remain to the effective communication and use of existing data and knowledge, particularly with regard to transferring existing data and knowledge from developed countries to developing and transition countries. Knowledge sharing can help to reduce duplication of work and be particularly beneficial for developing and transition countries in saving already scarce resources: for example, the sharing of existing chemical risk assessments can enable developing and transition countries to put in place national regulations for chemicals without the need to carry out their own costly and time-consuming risk assessments, as well as avoiding duplication of work for the private sector, which would not need to conduct new studies. In general, there are institutional and technical barriers to (1) the availability of data and information, and (2) the ability of users to gain awareness of and access to such information in meaningful ways. These barriers (especially at the national and regional levels) include a lack of standardization/harmonization of existing data and knowledge (although the GHS has achieved progress on this issue), insufficient sharing of knowledge, lack of information on datasets (e.g. metadata on collection and handling of data), insufficient (tools for providing) access to data, and lacking awareness of the existence of databases and information repositories.

Finding E.4: While awareness of the need to draw more systematically on a broad range of knowledge types is growing, there is a relative lack of processes for ensuring the effective incorporation of different sources of knowledge into a centralized knowledge base or centralized search engine specialized in finding existing information on chemicals and waste. The incorporation of knowledge from different sectors and disciplines as well as non-formal types of knowledge and mutual learning is particularly lacking. For example, there is little cooperation with interface bodies from other sectors and disciplines. Interdisciplinary knowledge production relevant to chemicals and waste also remains a challenge due, in part, to continued disciplinary boundaries in research institutions and societal conceptions of science, as well as different approaches and perspectives in different disciplines [53]. Processes to include local and indigenous knowledge (e.g. about ecosystems affected by chemical pollution) in the knowledge base are lacking (according to responses to survey questions regarding functions and mandates of interface bodies, as well as literature searches), with AMAP being a notable exception [54].

Table 10. Examples of information exchange and/or coordination that exists between science-policy interface bodies analyzed in this study (non-exhaustive list)

INTERFACE BODY	OTHER INTERFACE BODIES THAT IT EXCHANGES INFORMATION AND/OR COORDINATES WITH
BASEL OEWG	CRC, POPRC, GEF, GHS
CRC	OEWG, POPRC
POPRC	OEWG, CRC, GEF, AMAP
SAP	Intergovernmental Panel on Climate Change (IPCC)
EMEP	AMAP, UNEP, WHO, Minamata Convention, Secretariat of the Basel, Rotterdam and Stockholm Conventions (BRS Secretariat), World Meteorological Organization (WMO)
CLRTAP WG EFFECTS	UNEP, WHO, Minamata Convention, BRS Secretariat, WMO)
PROTOCOL ON PRTRS (UNECE)	AMAP, UNEP, UNITAR, SAICM
SCE GHS	OEWG, UNEP, OECD, FAO, WHO, UNITAR/International Labour Organization (ILO)
GEF	OEWG, POPRC, Minamata Convention, SAICM
GESAMP	IMO, UNESCO-IOC, WMO, FAO, IAEA, UN, UNEP, UNIDO, UNDP, ISA, GEF
AMAP	POPRC, EMEP, UNEP, UNECE, Minamata Convention, WMO

Table 11. Examples of science-policy interface bodies regarding their network expansion and outreach.

	DOES THE INTERFACE BODY ACTIVELY EXPAND ITS NETWORK?	DOES THE INTERFACE BODY REACH OUT TO UNIVERSITIES?
Under MEAs		
BASEL OEWG	Yes	Yes, outreach to universities may be undertaken in the course of fulfilling COP/OEWG mandates.
Associated with MEAs		
GMP	Yes	The GMP is actively seeking new partners, including in the academic sector.
PEN / DDT ALLIANCE	The PEN and the DDT Alliance are open to new members including from the academic sector and others.	
Not directly associated with MEAs		
UNEP EDC AG	Yes	The Advisory Group on EDCs invites individual experts to their meetings on the basis of expertise, previous work, and special interest in EDCs.
GCO	Yes	Universities, research institutions, individual academics and other academic actors working on topics directly or indirectly related to chemicals and waste management constitute another important target group of the GCO II.
OECD EHS	No	It is up to member country delegates to reach out to academia.

	DOES THE INTERFACE BODY ACTIVELY EXPAND ITS NETWORK?	DOES THE INTERFACE BODY REACH OUT TO UNIVERSITIES?
WHO CRAN	Yes. Network Participants will help identify new potential Network Participants.	Yes, many universities are participants in the Network.
WHO IPCS	No	Many university experts contribute to the work of IPCS.
FAO/WHO JECFA, JMPR, JMPM	The importance of developing new networks and channels and extending contacts with Codex Contact Points, universities, industry associations and other relevant parties is recognized.	Yes, many academic experts contribute to the work. The importance of developing new networks and channels, and extending contacts with universities is recognized.
GEF STAP	Yes	
IRP	The IRP is currently recruiting new panel members and representatives to its Steering Committee through an open call.	
GESAMP	Not known.	Yes. GESAMP's Working Groups hold workshops at universities, see [55].
IPCP	Yes. The Panel seeks to expand its membership and is open to academic scientists from all over the world to become members. In addition, stakeholders such as policy-makers, NGOs and industry will be invited to share their opinions and will be informed about outputs.	Yes. The Panel, a network of academic scientists, reaches out to universities. The IPCP wants to provide a global network of scientists within the field of environmental chemistry.
AMAP	Yes. Efforts to expand the network are continuous. AMAP products (data, publications, etc.) are widely available and used by universities in teaching courses, etc. AMAP co-sponsored the establishment of the University of the Arctic.	Yes. AMAP products are widely available and used by universities in teaching courses, etc. AMAP co-sponsored the establishment of the University of the Arctic.

4.3 SUMMARY OF IDENTIFIED GAPS AT THE CURRENT SCIENCE-POLICY INTERFACE

With regard to **scope and functions** of the science-policy interface / interface bodies:

- 1) A large number of interface bodies exist on the global, inter-regional, regional, national and local levels, covering a wide range of chemicals (or groups of chemicals) of concern and issues related to chemical management practice. Among them, interface bodies that are under or directly associated with the MEAs have highly specific mandates and cover a limited set of chemicals (or groups of chemicals) of concern. In contrast, many interface bodies established or hosted by intergovernmental and international non-governmental organizations have more flexible mandates and can theoretically address any issues of concern, subject to thematic domain and decisions of the governing body (or hosting institutions), and availability of resources and capacity (human and technical).
- 2) The functions of existing science-policy interface bodies vary considerably, with a major focus on providing scientific and technical support to policy-makers and scientific assessment of issues of concern. However, major gaps exist with regard to the following aspects:
 - a. Continuing challenges in ensuring timely scientific advice to policy-makers on issues of concern, particularly in terms of a timely identification of issues of concern in a policy-ready format;
 - b. A general lack of scientific and technical support to policy-makers in monitoring and evaluation of progress in the implementation of relevant policy measures for all chemicals (or groups of chemicals) of concern and on a planetary scale;
 - c. Continuing challenges in collecting, assessing, synthesizing and translating much existing scientific information into a policy-ready form;
 - d. A general lack of effective communication of policy-makers' needs back to the scientific community;
 - e. A general lack of effective communication of outputs generated by many international interface bodies to national policy-makers, particularly those in developing and transition countries;

As a result of the above, scientists and decision/policy-makers are not always best informed of developments and needs in the other sphere. Opportunities for synergies and joint development between science and policy are often missed and issues not addressed in the most effective and timely manner.

With regard to the **needs of and circumstances within developing and transition countries:**

- 1) A number of interface bodies have no specific procedures or rules in place to ensure that the needs of and circumstances within developing and transition countries are effectively taken into consideration;
- 2) Scientific knowledge produced in developing and transition countries generally lacks visibility in global assessments and international journals due to cultural, language and logistical barriers;
- 3) Capacity (specifically time, personnel, expertise and/or literacy skills) is often lacking in many developing and transition countries to effectively participate in relevant meetings and processes at the international science-policy interface (despite the awareness of and interest in participating in such meetings).

With regard to **networking, coordination and knowledge-sharing:**

- 1) There is a lack of coordination across all interface bodies (e.g., by one body) to allow for basic exchanges of information and cooperative efforts, as well as to avoid duplication of work;
- 1) Significant barriers remain to the effective communication and use of existing knowledge, data and tools generated by existing international science-policy interface bodies, e.g., institutional and technical barriers to (1) the availability of data and information and (2) the ability of users to gain awareness of and access to such information in meaningful ways.
- 2) There is a general lack of processes to ensure the effective inclusion and integration of scientific knowledge from different sources, sectors, disciplines and types (e.g., local and indigenous knowledge), often due to factors such as institutional barriers. This prevents the creation of a comprehensive and yet easily accessible overview of chemicals and waste-related issues, which are themselves often multi-disciplinary and multi-sectoral in nature.



5. LESSONS LEARNED FROM OTHER CLUSTERS

5.1 OVERVIEW

To strengthen the science-policy interface for chemicals management, it is helpful to review lessons learned from international science-policy interface bodies in different clusters. This was done for four bodies from other clusters with the overall aim of identifying best practices that may be useful in the context of the science-policy interface in international chemicals governance. The four interface bodies reviewed here are: the International Panel on Climate Change (IPCC), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Service (IPBES), the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), and the Science-Policy Interface of the United Nations Convention to Combat Desertification (UNCCD-SPI). This section provides a brief overview of these four interface bodies and their operating procedures. Then, it presents lessons learned from (1) their institutional setups and outputs, (2) positive impacts that they have created, (3) factors contributing to their effectiveness, and (4) limitations and challenges within and beyond them. This section serves by no means as an evaluation or a comparison of IPCC, IPBES, GESAMP, and UNCCD-SPI. Rather, readers are encouraged to focus on gaining insights into general aspects of what constitutes an effective/strong interface body, supported by evidence from real world examples.

5.2 A BRIEF OVERVIEW OF THE FOUR INTERFACE BODIES CONSIDERED

The four interface bodies represent a range of different approaches to institutional setup, governance, and operating procedures (see Table 12 and Figure 1). Table 12 gives an overview of the main aspects of each interface body's institutional setup and outputs. While it is beyond this report's scope to provide exhaustive details of each

interface body's historical development, many of the most pertinent points to the discussion on strengthening the science-policy interface in international chemicals governance are addressed. Figure 1 provides an overview of the interface bodies' operating procedures for carrying out their main activities (the latter are outlined in Table 12). While the figure shows general procedures, it does not necessarily show all iterative steps, all processes, nor all activities of each interface body. For more details on respective procedures, see the associated documents for IPCC [56], IPBES [57,58], GESAMP [59–61], and the UNCCD-SPI¹. Different aspects of these procedures are further discussed in detail in the following sub-sections.

Table 12. Overview of the institutional setups and outputs of the science-policy interface bodies from other clusters

	IPCC	UNCCD-SPI	GESAMP	IPBES ¹
TYPE OF BODY (YEAR OF ESTABLISHMENT)	Independent intergovernmental body created by WMO and UNEP (1988), endorsed by the United Nations General Assembly	Interface body embedded within the UNCCD, established upon decision by COP11 (2013)	Inter-UN-agency scientific advisory body, established by UN Sponsor Organisations (1969)	Independent intergovernmental body established by UN Member States (2012)
INSTITUTIONAL ARRANGEMENT	Intergovernmental Panel	Independent / “stand-alone” interface body directly serving the Committee on Science and Technology (CST) within the UNCCD	Network-of-networks	Intergovernmental Panel
PRINCIPAL MANDATE	Assess scientific, technical, socio-economic information relevant to climate change [62].	Provide the UNCCD Committee on Science and Technology thematic guidance on knowledge requirements for implementing the UNCCD [63].	Provide advice to the UN system (i.e. Sponsors) on scientific aspects of marine environmental protection [59].	Assess knowledge on biodiversity and ecosystem services, prioritize key scientific information for policy-makers, support policy-making, and facilitate capacity-building [64].

¹ See Annex 1 of [110] “Proposed Model for the Provision of Scientific Advice to the UNCCD decision-making process”. It is unclear whether this proposed model was officially adopted, however a report from the Earth Negotiations Bulletin [142] indicates that the relevant decision was made. The authors of this report contacted UNCCD-SPI for clarification, but they did not receive a response before the report was finalized. For more details, see [143].

	IPCC	UNCCD-SPI	GESAMP	IPBES ⁱ
MAIN ACTIVITIES	Produce global reports reviewing and assessing climate change science (no own research or monitoring).	Analyze, synthesize, and translate relevant scientific findings and recommendations from desertification, land degradation and drought (DLDD)-specific conferences and relevant stakeholders and experts into proposals to be considered by CST for the consideration of the COP (no own research or monitoring).	(Produce reports on) scientific research performed by Working Group members on issues selected by Sponsors; provide overviews of environmental monitoring, assessment, and related activities of UN agencies [65] (members conduct own research, no monitoring).	Produce regional and subregional assessment reports and summaries for policy-makers related to biodiversity and ecosystem services, facilitating the use of policy-support tools, communications and outreach (no own research or monitoring).
MAIN OUTPUTS	Assessment Reports (every 3-5 years) with chapters corresponding to each Working Group; Special Reports; Summaries for Policy-makers, outreach activities through social media (all UN languages).	Synthesis reports of implementation of Work Programme for the CST (official COP documents ⁱⁱ ; scientific advice to the UNCCD decision-making processes (English only).	Journal series of reports and studies, contributions to other UN processes ⁱⁱⁱ ; hazard assessments of harmful substances ^{iv} (English only).	(Sub)regional assessment reports; Summaries for Policy-makers; scientific journal articles; capacity building tools (all UN languages).
MEMBERS	Currently, 195 State Members (open to governments which are members of the UN or WMO).	Currently, 25 = 15 independent scientists (10 globally selected plus 1 from each of 5 regions), 5 CST Bureau members, 5 observers.	Currently, 17 experts including scientists, independent consultants, and government representatives.	Currently, 131 State Members (open to governments which are members of the UN).
FUNDING	Regular contributions from WMO and UNEP; voluntary contributions from Member States, UNFCCC, and other UN bodies to the IPCC Trust Fund [66,67]	UNCCD-SPI ^v	UN Sponsor Organizations, resources organized within a Trust Fund.	Voluntary contributions from Member States, UN bodies, and other stakeholders to the IPBES Trust Fund [68].
NATIONAL FOCAL POINTS	Yes [69]	No, but UNCCD has national focal points.	No	Yes [70]

	IPCC	UNCCD-SPI	GESAMP	IPBES ^I
SUBSTRUCTURE	3 Working Groups each with own Technical Support Unit (TSU); Task Force on National Greenhouse Gas Inventories with own TSU and Bureau members; Data Distribution Centre	None apparent.	Working Groups active for determined/finite projects; Correspondence Groups to develop proposals; GESAMP Pool of Experts	Multidisciplinary Expert Panel – 25 members (5 from each UN region) [57,71,72]
MAIN MEETING(S)	Biannual “Session of the IPCC” and “Session of the IPCC Bureau”; Lead Author Meetings for respective reports, other expert group meetings; IPCC at the UNFCCC COP [73]	Annual “Meeting of the Science-Policy Interface of the UNCCD”; UNCCD COP	Annual “Session of GESAMP”	Annual “IPBES Plenary”; Convention on Biological Diversity (CBD) COP
DEVELOPMENT OF WORK PROGRAM	Experts nominated by the Parties and Observers draft outline of reports, approved by the Panel [56]	Bureau and SPI Members draft Work Programme including proposals from invited Parties and stakeholders, approved by the COP ^{VI}	Pool of Experts and its Working Groups propose new/emerging issues, decided by Sponsors whether to pursue [60,65]	Bureau and Multidisciplinary Expert Panel draft Work Programme including proposals from stakeholders ^{VII} , approved by the Plenary
REVIEW MECHANISM OF THE BODY AS AN ORGANIZATION	After 22 years (2010) by the independent InterAcademy Council, upon request of the UN Secretary General and the IPCC Chair [74].	After 4 years (2017) by an external team of consultants, upon request of the UNCCD Evaluation Office; next review in 2023 [75].	After 30 years (2001) by an independent Evaluation Team commissioned by Sponsors [76].	After 4 years and upon completion of the first Work Programme (2018) by the independent International Council for Science and an internal review team, to be presented in the forthcoming plenary IPBES-7 [77].

I. General information for IPBES in this table is taken from [58].

II. See [78] and [79] as examples.

III. e.g. UN Regular Process, see the report of the 44th session [80].

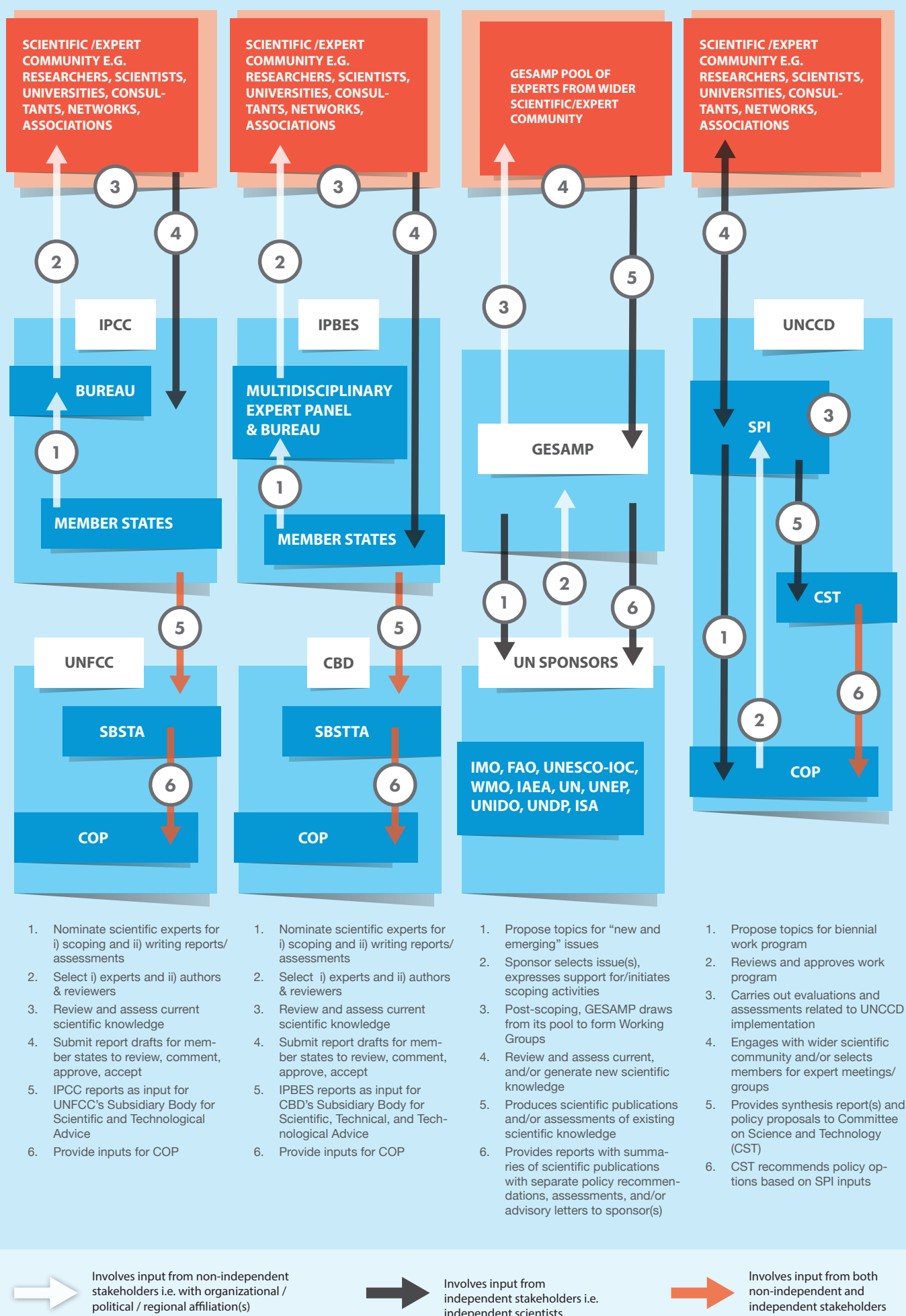
IV. See the EHS Working Group [47].

V. See item 6 in Decision 23/COP.11 [81].

VI. See item 24 in [82].

VII. See item 26 in [57].

Figure 1. Overview of the operating procedures of the four considered interface bodies.



5.3 LESSONS LEARNED REGARDING INSTITUTIONAL SETUP AND OUTPUTS

Two main lessons emerge from Table 12. Firstly, the different institutional setups, functions, and outputs of each interface body are attributed to the different needs and specific conditions within each cluster (e.g., MEAs already in force, maturity of scientific knowledge, and extent of consensus) at the time when they were set up and revised. This “no-one-size-fits-all” notion [83] does not preclude learning from others (e.g., IPBES frequently compares itself to the IPCC²). Crucial is that the functions and mandates of the interface body can be fulfilled by the respective institutional setup, i.e., “form-follows-function”, as also mentioned by many experts at the November 2018 workshop in Geneva, Switzerland (see Section 2.2).

Secondly, Table 12 represents a static “snapshot” of the interface bodies at the time at which this report was prepared. In reality, their institutional arrangements and ways of working have evolved over time through trial-and-error and/or (external) review, including feedback from stakeholders. For example, GESAMP’s mandate has been broadened over time to not just include the scientific aspects of marine pollution, but also the protection and management of marine resources [84]. Upon the recommendation of an external assessment [85], membership of the UNCCD-SPI was extended to include two additional observers in addition to the existing three observers and twenty scientific and bureau members [86]. A further example is IPBES, which for its next work program up to 2030 has a rolling basis that was proposed by some parties [87] to replace the previous practice of predefining the program at the beginning. This new format has already been incorporated into IPBES’s latest work program draft [88]. This shows that it can be useful to have a mechanism in place that allows various aspects of an interface body to evolve over time [83], while building upon tools that are already being used at the decision-making and policy levels [89].

5.4 LESSONS LEARNED REGARDING POSITIVE IMPACTS OF THE DIFFERENT INTERFACE BODIES

There are a number of positive impacts that have been generated by these four interface bodies on processes, behaviors and ways of thinking within their respective science and/or policy fields. In the context of strengthening the science-policy interface in international chemicals governance, the six impacts highlighted here may serve as inspiration. .

2 According to [144], “To some extent IPBES does for biodiversity what the IPCC does for climate change.”

Created positive feedback and enabling environments for (co-)development in both the science and policy spheres

Interface bodies can generate positive feedback and enabling environments that have multiplicative and sometimes catalytic effects on increasing the quantity and speed of (co-) development in both science and policy, respectively. On the one hand, by engaging scientists in topics of policy-relevance [90], interface bodies introduce potentially new avenues of scientific research and collaboration. On the other hand, by engaging policy-makers through their role in knowledge brokering [91], interface bodies foster timely uptake and application of scientific knowledge by policy-makers and enable timely, science-driven policy development and practical implementation.

An example of the first case is GESAMP's effect on catalyzing scientific research, specifically with reference to how new and emerging issues are addressed: Scoping of new and emerging issues (see Figure 1) occurs on an annual basis at the proposal of GESAMP's members and Pool of Experts (scientists) and support/approval of at least one UN sponsor [60]. Once the scoping of an issue is successful and complete, a working group of scientists selected from the Pool of Experts is formed. Scoping and the formation of a working group under the auspices of GESAMP creates positive feedbacks in the development of science because scoping ensures that research objectives will have policy relevance. In addition, the formation of GESAMP working groups gives the participating scientists formal and institutional recognition that is relevant for their own career development in academia, while also making financial resources available to them from the relevant UN sponsor(s).

Some of these financial resources go towards workshops which allow them to meet, discuss, and plan the writing of scientific research papers. For example, as of September 2017, twelve scientific papers intended for peer-reviewed publication were being “developed from the workshop discussions” of Working Group 38 (Atmospheric inputs to the ocean)’s 2017 workshop³, in addition to the six other papers “resulting from the 2013 workshop” [92] under the group’s Terms of Reference [80]. The formation of such a group through GESAMP provided scientists with additional opportunities for the validation/recognition of their work and/or financial resources for supporting collaboration.

Currently, the predominant means by which interface bodies achieve timely, science-driven policy development is by being an important producer of scientific materials dedicated to policy-makers within their respective domains. IPCC and IPBES are key examples of interface bodies that have been successful in this respect. In particular, they represent a unified and singular voice of up to thousands of scientists (e.g., through authoritative and easily accessible scientific assessments and accompanying summaries for policy-makers), which signals a high level of scientific authority and consensus to policy-makers [83]. In addition, GESAMP’s “single ‘shop front’ for

3 See Appendix II in [55].

scientific advice on marine environmental issues from an international perspective” likely achieves a similar effect, while providing “access to expertise that may not be readily available nationally” [59].

In these ways, these interface bodies create enabling conditions and confidence for policy-makers to take up and use (new and emerging) scientific knowledge in policy development in a timely manner. Without such materials, policy-makers would have to dedicate significant time and resources and have sufficient expertise to collect, interpret, and synthesize scientific articles. This may become particularly challenging when relevant scientific articles are written in technical/specialist language and styles [90], loaded with details extraneous to decision- and policymaking, fragmented and scattered over 10,000s of scientific journals [89,93], or are at times (seemingly) contested. Especially noteworthy is the IPCC’s calibrated language to convey levels of uncertainty [94] and their established protocols to deal with possible errors in reports [95]. Using such standards, scientific consensus documents can provide a common ground for more efficient and effective policy discussions, which helps avoid time-consuming scientific debate by policy-makers and stakeholders that may have different interests. This has also been the case for GESAMP, which is responsible for developing the definition of marine pollution, which has since been used in multiple global legal instruments [84,96]. At the same time, achieving consensus is also useful for the scientific community as it allows for the identification of knowledge gaps and research priorities for further scientific development [93].

Furthermore, interface bodies can also aid policy-makers by translating policy visions into means of practical implementation, as the UNCCD-SPI has done in the field of land degradation neutrality (LDN) [97]. In this specific example, the UNCCD-SPI provided a scientific basis for developing frameworks to understand, implement, and monitor LDN, including ‘building blocks’ for target setting at the national level by policy-makers [98]. These blocks have provided a means for analyzing progress, challenges, and opportunities of national implementation in practice [99].

Increased political commitment

Through high-level political involvement by making individual states official members and having focal points in national governments, IPCC and IPBES have gained visibility and fostered political commitment on climate change and biodiversity issues, respectively. IPCC and IPBES also require states’ contributions in key processes, e.g., nominating authors for their scientific assessments and approving final drafts, particularly the summaries for policy-makers. These duties give states ownership, which increases the likelihood that results are translated into practice [100], and it encourages them to take responsibility for the results of the reports’ findings and subsequent actions in response to these findings. Similarly, in the case of the UNCCD-SPI, member states of the UNCCD are responsible, through the COP, for official decisions that determine, e.g., the UNCCD-SPI’s work program. Giving states such

authority over the work of the UNCCD-SPI increases their ownership of the outcomes of the UNCCD-SPI's work, thereby making states direct stakeholders invested in the UNCCD-SPI's performance.

Increased public awareness, participation, and confidence

IPCC and IPBES have been particularly successful in raising public awareness, participation, and confidence, which is vital for policy-makers to achieve effective implementation of legislation [101]. Members of the public need to have access to relevant information, be motivated, and be able to take action in order to make their interests clear to their governmental representatives and to change their own behavior [102]. IPCC and IPBES engage the public through strong social media presences (including Facebook, Instagram, Vimeo, and LinkedIn) that update 'followers' on their latest activities, findings, and events. Engaging the public at large can be seen as an act of transparency and democratization of knowledge that increases accountability in the policymaking process and in turn public confidence in the decisions taken.

The unified and cohesive front that these interface bodies present, in addition to serving as a conduit for scientific information in ways which are easy to understand, has likely also played a role in the increased media coverage of climate change and biodiversity issues. This increased coverage has further strengthened public awareness and encouraged dialogue amongst non-expert stakeholders. Another example of engaging the public at large is IPBES's informal 'Stakeholder Day' events held prior to each plenary session to give stakeholders the opportunity to receive updates on IPBES's work and processes. In an effort to increase accessibility, IPBES also provides free webcasts of the event for those who cannot attend in person [103]. Furthermore, the work of IPCC and IPBES in achieving consensus among scientists and policy-makers through their clear, inclusive and rigorous assessment processes can also raise public confidence and trust that decision-making processes are backed by rigorous scientific knowledge that was subjected to extensive peer-review by experts and governments [104].

Supported the development of future generations

Increasing public participation also supports the development of the next generation of leaders in the field. This can include, for example, policy-makers, engineers in industry, and scientists. In particular, the involvement of young scientists has been strengthened by IPBES through its fellowship programs (post-doctoral [105] and early-career [106]) and internships [107], and by IPCC through its doctoral scholarships for students from developing countries [108]. Such efforts effectively provide increased opportunities within and outside of the interface bodies for future generations to engage academically or occupationally with issues relating to climate change and biodiversity.

Supported the involvement of scientists in decision-making processes

Interface bodies are well-positioned to support decision-making processes because of their regular contact with (and independence of) key actors in both the science and policy spheres, in-depth knowledge of the actors as well as issues and challenges faced by these actors, and technical capabilities. The UNCCD-SPI is a pertinent example in these respects: recently, the interface body was tasked, within its mandate, to evaluate how the UNCCD's Scientific Conferences contribute to the decision-making processes of the UNCCD [109,110].

In brief, the UNCCD-SPI analyzed matters relating to productivity, e.g., to what extent its scientific conferences' recommendations were converted into decisions of the UNCCD COP and how attendees responded to the format of scientific conferences. Some of the key findings are particularly insightful and constructive: “[m]any scientists were also not aware of the format in which science needs to be delivered in order to be relevant to policy”, and thus “led to the development of inadequately formulated recommendations by scientists, which may have hampered a stronger impact on the UNCCD decision-making process.” It also found that “[q]uestions and comments raised by decision-makers were largely politically-driven (e.g. focusing on issues such as economics, law and procedural matters); rarely did these interventions promote scientific discussions, limiting the potential for synthesizing scientific findings.”

To address these issues, the UNCCD-SPI proposed a decoupled model which would separate “the generation of scientific advice from political meetings, but not decouple the process of inputting policy-relevant scientific findings from the political process” [110]. The decoupled model operates in the following manner: after the UNCCD-SPI selects a mechanism to implement the COP's decision, scientists will be engaged and assembled possibly through scientific meetings that would take place either as stand-alone expert meetings, or in conjunction with scientific conferences that are separate from official sessions of the Committee on Science and Technology (CST). The outcomes of these meetings will then be included in a synthesis report by the UNCCD-SPI to the CST and the COP. Considering the real need for useful outcomes from these scientific conferences and investment of budgetary resources and time of conference attendees, the UNCCD-SPI's findings are critical toward improving the efficiency of such conferences, and thus involvement of scientists to maximize their contributions to the UNCCD decision-making processes.

Increased knowledge management and accessibility

Knowledge is often scattered across various resources, as it is generated by numerous experts around the world and published in different journals and on websites in various formats and languages. By providing a centralized platform for distributing knowledge and facilitating its use, science-policy interface bodies make it easier for

policy-makers and other stakeholders to find relevant knowledge, and they can help ensure the same knowledge and tools are considered by all stakeholders to facilitate consistency and for monitoring progress [91]. Examples of such knowledge management initiatives include the UNCCD's Knowledge Hub [111] (where the UNCCD-SPI's outputs are also hosted), the IPCC's Task Force on National Greenhouse Gas Inventories [112] (including methodologies, emission factors, etc.), and the IPBES's Policy Support Tools and Methodologies [113] (containing catalogues of publications, experts, and organizations providing policy support). These web platforms distribute products of the interface bodies such as assessments, methodologies, and software, and encourage their widespread use, which allows for comparisons. According to an internal review, the UNCCD's Knowledge Hub has had the ability to increase awareness of national and regional results, simplify information-finding processes, and consolidate search results for potential linking to mobile applications and other tools [114].

5.5 LESSONS LEARNED REGARDING FACTORS THAT CONTRIBUTE TO INCREASED EFFECTIVENESS

Four desirable qualities that an effective science-policy interface and its related interface body should have include: credibility, legitimacy, salience and agility [115–118]. The definitions for each of these as well as examples of how these qualities can be achieved in practice are presented here using the four interface bodies considered. This information is intended to be illustrative but not necessarily exhaustive. The examples included were selected primarily to demonstrate the breadth of options available. In addition, some of the examples may simultaneously represent multiple desirable qualities: for example, well-defined rules of procedures and codes of conduct can increase both credibility and legitimacy of the organization and its work. However, here the examples are each included only under a single category. Furthermore, it should also be noted that the examples included may not be of equal importance. Thus, when a new interface body is designed, the actual selection of means to achieve these desirable qualities depends on the mandate and goals of the body.

Credibility is defined as the trust in and recognition of the expertise of a body by stakeholders, achieved by the body through, e.g., transparent practices and the production of reliable findings with high standards of scientific and technical integrity. Examples of how this can be achieved in practice include:

- 1) Treat expert pool as a database and select members for assignments using transparent criteria (e.g. regional and gender balance, expertise) to avoid potential or perceived bias; see e.g. GESAMP's Pool of Experts [59].

- 2) Separate sections of scientific outputs from policy recommendations using a two-tier reporting system to avoid conflation; see e.g. GESAMP [119].
- 3) Subject scientific findings to established peer-review processes of the scientific community, independent of political influence; see e.g. GESAMP Working Groups' journal articles [120].
- 4) Subject scientific outputs to multiple sequential rounds of peer-review by the global scientific community and member states; see e.g. IPBES and IPCC [58,121].
- 5) Include observers amongst the official members in all meetings and processes, not just as participants of key meetings; see e.g. UNCCD-SPI [82].
- 6) Incorporate different knowledge systems and develop a participatory mechanism to facilitate an appropriate evaluation and inclusion of non-formal types of knowledge in the interface body's work; see e.g. IPBES and its use of indigenous and local knowledge [57].
- 7) Include clear and transparent rules of procedures and documentation from the beginning, including terms of reference, workplan, milestones, deadlines, provisions for peer review, marketing and distribution strategy; see e.g. GESAMP [59].
- 8) Adoption of a clear code of conduct and rules of procedure to avoid conflicts of interest by any individual directly involved in the body's work; see e.g. IPCC [122] and IPBES [123].

Legitimacy is defined as having the support of stakeholders through their commitment to the interface body's initiatives by, e.g., being inclusive of all stakeholders and divergent views. Examples of how this can be achieved in practice include:

- 1) Scientists and policy-makers should co-develop work programs involving an initial proposal of topics by scientists/interface body members and inputs from stakeholders, followed by approval by policy-makers or vice-versa; see e.g. GESAMP and UNCCD-SPI (see Figure 1).
- 2) Select members following an open, public call; see e.g. UNCCD-SPI [124].
- 3) Draw from a global pool of experts and scientists and receive approval/endorsement of scientific outputs from governments; see e.g. IPCC and IPBES [125].
- 4) Potentially expand non-governmental stakeholders' rights and legal status beyond observer roles; see e.g. IPBES [83] and consider possibly involving them in scoping activities [126].

- 5) Hold web conferences that are open to all for the discussion of knowledge gaps, the consultation on knowledge needs of policy-makers and practitioners, and the identification of priority areas for relevant knowledge generation to inform research, policy and funding agencies, and to catalyze the generation of new knowledge; see e.g. IPBES [127].

Saliency is defined as carrying out work that is relevant to the needs of relevant stakeholders. Examples of how this can be achieved in practice include:

- 1) Consider proposals from parties and stakeholders when developing work programs; see e.g. UNCCD-SPI [128].
- 2) Involve policy-makers in scoping processes, i.e., scientists propose topics and policy-makers must express support for a topic before it can be formally pursued (ensures existing mandates of other organizations are fulfilled); see e.g. GESAMP [60].
- 3) Tailor the outputs to suit the context-specific knowledge requirements and needs of the circumstances, i.e., not just scientific articles or reports, but potentially also other forms of grey literature such as advisory letters to the UN sponsors and hazard profiles [83,96,129]; see e.g. GESAMP [130,131].
- 4) Perform regional assessments that are tailored to specific conditions of these regions, making their findings directly relevant and applicable on a local scale; see e.g. IPBES [132].
- 5) Align the interface body's work and outputs with the 'currency' of its stakeholders [91]. For example, GESAMP's scientific members produce peer-reviewed publications as part of GESAMP work.

Agility is defined as having efficient organizational practices that minimize duplication of work and allow for flexibility and the ability to adapt to changing circumstances. Examples of how this can be achieved in practice include:

- 1) Form working groups with specific tasks and mandates of limited terms (e.g. 1-3 years) after which the group is disbanded [84], emphasize inter-sessional work, and schedule meetings according to the actual needs of the work and not at fixed time intervals; see e.g. GESAMP [59].
- 2) Incorporate a rolling basis for work programs that will rely on periodic open calls, inputs, and suggestions instead of pre-determining topics from the beginning; see e.g. IPBES's next work program (2020-2030) [88].
- 3) Renew work programs in the short-to-medium term, focus on a few selected topics instead of many, and coordinate with relevant organizations on topics of shared interest; see e.g. UNCCD-SPI [93,133].

- 4) Approve reports by correspondence using electronic communication (e.g. e-mail, online platform) instead of at formal, physical meetings; see e.g. GESAMP [59].

5.6 LESSONS LEARNED REGARDING LIMITATIONS AND CHALLENGES

In the following section, ongoing challenges and limitations are highlighted that may be shared among interface bodies in general, drawing from examples observed from the four selected interface bodies.

Limited awareness of the interface body's work within and beyond the cluster

Communication and outreach require time, resources, and expertise. The differing mandates of the interface bodies determine with whom and to what extent they carry out communication and outreach activities, including but not limited to: distribution of the knowledge and products generated by the interface body and sharing information on the interface body's activities.

Despite the UNCCD's aims to centralize knowledge management through its Knowledge Hub [111], and the UNCCD-SPI's communications strategy [134] that targets policy-makers, the scientific community, and broader audiences such as UN entities, reaching their primary audience remains a challenge. According to a recent assessment of the UNCCD-SPI, "policymakers and practitioners ... did not seem to be fully aware of the SPI documents" related to Land Degradation Neutrality (LDN) despite its work on LDN being considered "the most significant SPI work" [135]. This assessment also found that "many interviewees considered that the overall impact of the SPI products beyond those familiar with the UNCCD process and the activities of the secretariat is still low, as a wider audience of end users has not yet been reached."

Similarly, even amongst its target audience of policy-makers and scientists, the poor dissemination of GESAMP reports has been a concern [84,129]. GESAMP's outputs have only been communicated to public, non-scientific audiences only to a limited extent (although granted, this is not one of GESAMP's objectives [136]), and GESAMP was not found to have any social media presence. Although summaries of working group activities and publications are provided in their Reports and Studies series, which are freely available online, they are presented in a rather non-user-friendly format. Overall, there have been only limited outputs tailored to lay audiences with non-technical backgrounds in simple language, which may hinder the level of awareness of GESAMP's activities and findings within and beyond the cluster and amongst the general public.

Limited effective participation of developing and transition countries

Language barriers, cultural differences, and a lack of institutional and/or financial capacity may still limit representatives of developing and transition countries from fully participating and contributing to work within the interface body, despite there being nominally balanced regional representation in the interface body's membership, meetings and relevant processes. This observation was noted in the case of the UNCCD-SPI through interviews with UNCCD Secretariat members [137]. In addition, in the case of biodiversity beyond IPBES itself, developing and transition countries have been reported to be minimally represented in international scientific discourse in the form of publications in top scientific journals, although much of the world's biodiversity is located in these countries [138].

Timelines of interface body's work do not always match policymaking needs

Policy-makers require timely scientific guidance in the face of rapidly changing conditions, including economic and political priorities [89,139]. However, interface bodies are not always able to provide such guidance following timelines that match policy-makers' requirements [140], as has been the experience of the IPCC [141], whose “blockbuster” reports have come under criticism for the length of their preparation cycles (3–5 years), to which some stakeholders have in response proposed smaller but more frequent reports.



6. OPTIONS FOR STRENGTHENING THE SCIENCE-POLICY INTERFACE

6.1 OVERVIEW

Building on identified gaps in the current interface (Section 4) and lessons learned from other clusters (Section 5), here three options are explored for strengthening the science-policy interface in international chemicals governance, including a brief discussion of their pros and cons, as well as specificities to be considered in their design.

These three options are not mutually exclusive, i.e. two or more options can be simultaneously implemented, as also pointed out by experts during the November 2018 workshop in Geneva, Switzerland. In addition, neither the list of options nor the specificities to be considered in their design presented here are exhaustive. In other words, other options may arise from further discussion and be considered (e.g., hybrids of the three options). Additional specificities may also be considered in the design of possible options, with insights gained from existing interface bodies in international chemicals governance (for examples, see Annex 5) and in other clusters (e.g. Section 5), as well as from the summary document of the November 2018 workshop in Geneva [40].

Furthermore, informed by experience in other clusters (Section 5.2), it is generally recommended to select options based on a set of clearly defined objectives and functions (e.g., provision of an objective scientific assessment on broader chemicals and waste issues; identification of issues with emerging evidence of concern; for a more comprehensive list of desired objectives and functions, see Section 3). In this way, form follows function. It should also be noted that the form should have a certain flexibility (e.g., by having a periodic review mechanism) to allow the form to evolve as new needs/objectives arise. In other words, the form may start with a small set of core objectives and functions, but use a flexible structure to allow for the expansion of objective functions over time.

6.2 OPTION 1: ESTABLISH A DEDICATED INTERGOVERNMENTAL MECHANISM

In this option, IPCC and IPBES may be used as models for establishing a dedicated intergovernmental mechanism to connect the science and policy aspects of chemicals and waste.

Pros: As shown in Section 5.3, such an intergovernmental mechanism can result in a number of positive impacts, including raising the profile of the sound management of chemicals and waste to higher political levels; raising public awareness, participation and confidence on the matter; and helping to identify and highlight key challenges in this area globally. Such a formalized body can also provide additional incentives (e.g. formal recognition) and support for academic scientists and institutions to participate in activities at the science-policy interface. The intergovernmental nature (through formalized structures and procedures) can also ensure the salience, legitimacy and credibility of its outputs, as well as the ownership and buy-in of outputs.

Cons: Considering the complex nature of the cluster (e.g., different chemicals may require a different set of sectors, disciplines and expertise; see Section 1.3), such a formalized intergovernmental mechanism may easily become too rigid and not agile enough. In addition, a heavy institutional design entails costs. Considerable time-lag may exist between requests and final outputs, which are often outdated once published.

Specificities to be considered in the design:

- The nature of the mechanism, including the source of mandates: e.g., established under legally-binding or voluntary MEA(s), similarly to the Scientific Assessment Panel to the Montreal Protocol and UNCCD-SPI; or established as an independent body, but associated with legally-binding or voluntary MEA(s), similarly to IPBES to the CBD and IPCC to the UNFCCC;
- The desired objectives, functions and outputs of the mechanism;
- The composition of the mechanism (including rules and procedures to avoid conflicts of interest, ensure credibility, ensure the consideration of the needs of and circumstances within developing and transition countries);
- How to engage a broader range of scientists and provide relevant incentives (particularly for academic scientists);
- How to coordinate with existing interface bodies, particularly those under the MEAs to avoid duplication of work;
- Etc.

6.3 OPTION 2: ESTABLISH A “NETWORK-OF-NETWORKS” TO CONNECT EXISTING INTERFACE BODIES AND OTHERS

In this option, GESAMP as a mechanism for coordination and cooperation among ten UN agencies can be used as a model to establish a “network-of-networks” coordinated by a central hub to connect existing interface bodies and others (e.g. scientific networks, governments, industry, civil society; see Figure 2). In brief, the central hub would be independent of existing interface bodies. It does not duplicate existing work carried out by existing interface bodies, but rather helps to coordinate inputs for their work (e.g., by distributing the call for evidence/information to its academic networks), or coordinate cooperative actions across several existing interface bodies, as the need arises. For work areas that are not covered by existing interface bodies, the central hub may also establish time-limited, ad hoc Working Groups to quickly respond to needs, similarly to the Working Groups under GESAMP.

Pros: A network-of-networks can be coordinated by a lean, central hub, and would therefore be agile and flexible. This “may improve the willingness of organizations, networks and individual scientists to participate and to cooperate within the network” [100]. It can also increase the efficiency and effectiveness of existing interface bodies and promote synergies and cooperative actions. Furthermore, it can attract and actively engage new actors (e.g. national research foundations).

Cons: “knowledge holder organizations need to be committed to working at the interface, a task not necessarily in their mandate and often difficult to achieve” [100].

Specificities to be considered in the design:

- The nature of the “network-of-networks” including the source(s) of their mandates: e.g., established 1) in an intergovernmental setting (i.e. governments determine the mandates and approve the final outputs) to ensure its salience, legitimacy, credibility and participation, particularly from developing and transition countries; or 2) established as an independent body, but with a multi-stakeholder steering committee;
- The desired objectives, functions, and outputs of the network;
- The need for plenary meetings like those of the IPCC and IPBES;
- The structure of the network (including rules and procedures to avoid conflicts of interest, ensure salience, credibility and legitimacy, ensure the consideration of the needs of and circumstances within developing and transition countries);

- How to engage a broader range of scientists and provide relevant incentives (particularly for academic scientists), e.g., through coordination with funding agencies, formal recognition of participating scientists, generation/coordination of peer-reviewed articles;
- How to effectively and efficiently share information and ensure coordination among network members (e.g., ensure a mutual acceptance of data) and its visibility;
- Etc.

6.4 OPTION 3: EXPAND THE ACTIVITIES (AND MANDATES) OF THE IOMC ORGANIZATIONS

In this option, existing activities within the IOMC organizations can be expanded and formalized. For example, the Global Chemicals Outlook and Global Waste Management Outlook can be formalized as a regular process to bring scientific knowledge into a policy-relevant context. In addition, documents such as the WHO Environmental Health Criteria (EHC) documents and Concise International Chemical Assessment Documents (CICADs) can be used as a model to be formalized and expanded as a regular process to translate policy needs into relevant scientific questions and guide cooperative research efforts across relevant disciplines ensuring that the big picture is taken into consideration. Furthermore, the International Conference on Mercury as a Global Pollutant can be used as a model to be formalized as a regular process to coordinate and foster dialogue between scientists and policy-makers with regard to the needs of each sphere and encourage cooperative action for the co-development of science and policy.

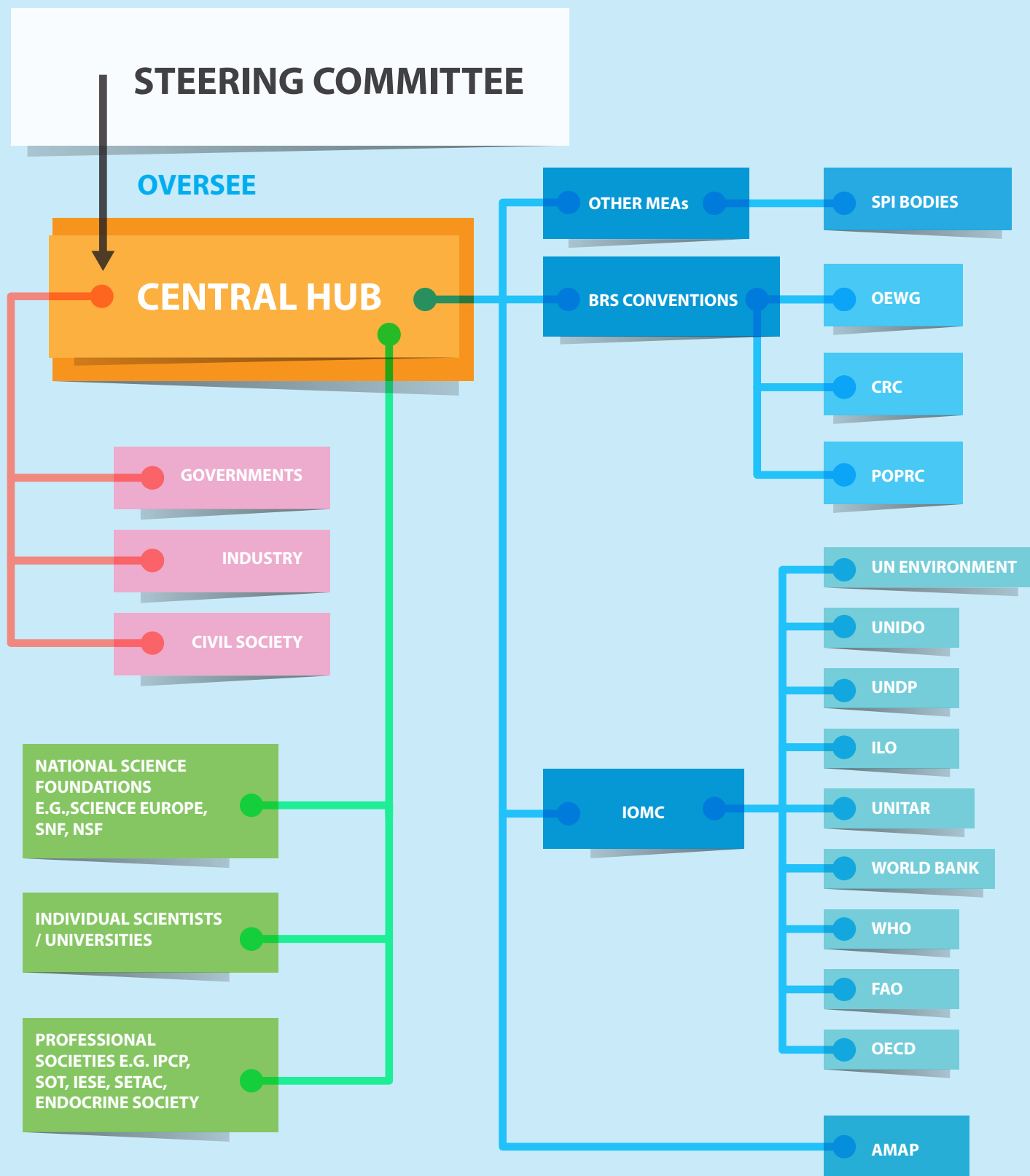
Pros: Flexible mandates of the IOMC organizations can be extended to cover additional chemicals and related issues. Extensive networks, experience and lessons learned already exist.

Cons: As individual IOMC organizations focus on different thematic domains, strong coordination across organizations and their governing bodies is continuously needed (i.e. the need for a coordination body similarly to GESAMP for chemicals and waste). As intergovernmental organizations, the IOMC organizations may focus predominantly on the policy needs, which might restrain the role of science. The IOMC organizations have limited funding and capacities, and they are generally already stretched to their limits.

Specificities to be considered in the design:

- The activities and outputs to be formalized, as well as how to standardize them;
- How to engage a broader range of scientists and provide relevant incentives (particularly for academic scientists).

Figure 2. A schematic illustration of a ‘network of networks’ coordinated by a central hub for chemicals and waste





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8. ANNEXES

Annex 1: Thought Starter prepared before the 1st Intersessional Meeting (SAICM/IP.1 /4)

Information included in this annex has been taken directly without editing of content from:

SAICM, First meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste beyond 2020, (2017). <http://www.saicm.org/Beyond2020/IntersessionalProcess/FirstIntersessional/tabid/5463/language/en-US/Default.aspx> (accessed January 29, 2019).

Desired outcome for the intersessional process:

- The role of science and its link to both policy and implementation are taken into consideration in the beyond 2020 discussions.

Key considerations:

- Considerable uncertainties about hazards and risks come with the ongoing development of new chemical substances and with the increasing use of chemicals in ever more products. The role of science in the Strategic Approach process is an important consideration, particularly in making science relevant and useful in policy and governance processes.
- Strengthening the link between science and policy may therefore be highly recommended in global chemicals governance.
- A new subsidiary body to a future International Conference on Chemicals Management addressing science-policy issues and functions could be established to fulfil a number of requirements.
- For a possible subsidiary body to be useful, precise terms of reference would be needed to ensure that all appropriate stakeholder groups are able to participate and that the full spectrum of scientific and public health disciplines related to chemical safety are actively engaged.
- Tasks could include: providing information on the state of knowledge on emerging and ongoing challenges; analysing options for dealing with the challenges; developing indicators for tracking progress on Strategic Approach implementation; and using a wide range of capacity building approaches, including education and training programmes, capacity building projects and others.

- Apart from spurring progress within the Strategic Approach, the subsidiary body undertaking science-policy functions could foster trans-disciplinary academic cooperation, enable information exchange and learning across disciplines and regions, and generally enhance the visibility of these issues within academia.

Questions:

- Is there a need to strengthen the link between science and policy beyond 2020? If so, what science-policy functions could be enhanced beyond 2020? Can existing organizations perform these functions, or is there a need for a new body?
- What are possible advantages and disadvantages of a subsidiary body?
- What elements would be needed for a precise terms of reference including provisions to ensure balanced participation, avoid bias and undue influence, and the engagement of all relevant disciplines?
- Would the subsidiary body:
 - Be time- or task-limited?
 - Assess emerging and ongoing challenges and provide policy-relevant knowledge on the effects of these challenges?
 - Advise stakeholders on a possible prioritization, based on the estimated social and environmental costs and benefits?
 - Link to potential future Global Chemicals Outlook processes?
 - Report to the Conference?
- How would this work link to the activities of other international venues (support the Multilateral Environmental Agreements) as well as work of Inter-Organization Programme for the Sound Management of Chemicals (IOMC) organizations?

Annex 2: Comments by stakeholders during the 1st Intersessional Meeting

Information included in this annex has been taken directly without editing of content from:

SAICM, Report of the first meeting in the intersessional process to consider the Strategic Approach and the sound management of chemicals and waste beyond 2020, (2017). <http://www.saicm.org/Portals/12/documents/meetings/IP1/K1707024.pdf> (accessed January 29, 2019).

IISD Reporting Services, First Meeting of the Intersessional Process for Considering SAICM and the Sound Management of Chemicals and Waste Beyond 2020: 7-9 February 2017, Earth Negotiations Bull. 15 (2017). <http://www.iisd.ca/chemical/SAICM/iccm5/ip1/> (accessed January 29, 2019).

Felix Dodds, Tellus Institute, discussed the 21st century challenges for chemicals and waste in the context of the 2030 Agenda for Sustainable Development ... He suggested learning from the SDGs partnerships process, including current work on “smart criteria” for multi-stakeholder partnerships, and considering a science-policy interface for chemicals and waste.

Morocco suggested post-2020 work consider linkages with the SDGs on air and water, the science-policy interface, and efforts to fill gaps in scientific knowledge and risk assessment.

Observing that not all chemicals and waste management issues can be solved by 2030, 2040 or even 2050, the **Russian Federation** suggested time limits for particular goals might be worthwhile, but not an overall SAICM time limit. He called for the future SAICM to have a stronger scientific basis, and, in that vein, proposed a science-policy interface similar to the Intergovernmental Panel on Climate Change (IPCC) or Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Colombia said SAICM provides value added through its multi-sectoral and multi-stakeholder approach, bringing together all relevant actors. He urged keeping this approach while reinvigorating partnerships and closing the gap between science and policy.

UN Environment ... said handling new and emerging issues is an important part of SAICM because it keeps the instrument dynamic, responsive, relevant and alive, and should be preserved beyond 2020, but that EPIs need to be addressed in a scientifically robust manner, using the most up-to-date science. He said that while

UN Environment is open to discussing various options for a science-policy interface, he cautioned that form should follow function and said UN Environment is uncertain what issues the interface might address that are not already being tackled by UNEA, the GCO, the Global Waste Management Outlook, and the International Resource Panel.

Sweden, supported by **Norway**, suggested ... if a science-policy interface were adopted it should not preclude SAICM participants from nominating new areas of concern.

Germany ... said a science-policy interface might be useful if it did not duplicate existing work elsewhere.

Health Care Without Harm emphasized the science-policy interface should not delay implementation by focusing on uncertainty of the hazardous effects of chemical substances, and highlighted the need for precise terms of reference of a possible scientific subsidiary body and for addressing conflicts of interest of that body's members.

The **US** ... noted that resources required for a scientific body would be better spent on implementation.

Germany suggested a review mechanism, to be discussed with the science-policy interface.

The African Group emphasized the lack of resources for scientific work in the countries of the region and called for developing a transparent mechanism for the nomination and selection of emerging issues that allows accountability, including accountability at the highest political level.

Flasbarth said the chemicals industry is a driver for the transformation to a decarbonized economy and underlined: the importance of public knowledge on chemical products; the need to substitute hazardous substances; the importance of non- chemical technological solutions; and the need for a science- policy interface on chemicals.

Norway suggested developing guidelines for sustainable chemicals production using a lifecycle approach and enabling product recycling. She did not support an additional scientific panel for chemicals and waste under a post-2020 platform.

Brazil stressed focusing on scientific capacity building and cautioned about diverting resources from implementation.

Annex 3: Comments submitted by stakeholders after the 1st Intersessional Meeting

Information included in this annex has been taken directly without editing of content from:

SAICM, Stakeholders' inputs to the Intersessional Process on SAICM and the sound management of chemicals and waste beyond 2020, (2017). <http://www.saicm.org/Beyond2020/IntersessionalProcess/Stakeholdersinputs/tabid/6098/language/en-US/Default.aspx> (accessed January 29, 2019).

0) Inputs in the Co-chair summary and agreed by Cameroon, Germany, ICCA, Suez Canal University, Togo, the US, and WHO

- Explore how to strengthen the link between science, public health and policy in global chemicals and waste governance.
- Recognize the existing mechanisms for provision of science advice on chemicals and waste by intergovernmental and international bodies such as UNEP, WHO and the chemicals and wastes conventions secretariats.
- Consider the social interface and the full range of scientific and public health disciplines.
- Explore approaches on the use of science to inform policy-making and action, including existing mechanisms in other clusters such as climate change and biodiversity.
- There were also comments regarding the need to focus on scientific capacity-building and caution about diverting resources from implementation.

1) The Secretariat of the Basel, Rotterdam and Stockholm Conventions

In the chemicals and wastes cluster, specifically under the BRS conventions, a number of processes and activities are taking place on enhancing the science to action interface.

At the 2017 COPs, Parties adopted similar decisions on science to action, among others, calling for the revision of a roadmap for further engaging Parties and other stakeholders in informed dialogue for enhanced science-based action in the implementation of the conventions at the regional and national levels, taking into account the roles of the scientific bodies of the conventions.

The draft roadmap considered at the 2017 COPs already provides some initial actions

that countries and stakeholders may implement at the regional and national levels towards enhancing this interface, for instance:

- Build national and regional capacity on how to use scientific information in decision-making and to involve stakeholders in science-based decision-making
- Build networks and partnerships for enhanced science-based action
- Address challenges faced by developing countries and countries with economies in transition in science based decision-making
- Enhance collaboration between Secretariat and other entities on information sharing and outreach on scientific aspects of the BRS conventions

2) Canada

Rather than creating a new body, we may wish to recognize strengths/abilities of existing science-based mechanisms in informing policy making (UNEP, WHO, MEAs including technical subsidiary bodies, OECD, UNEA, and ad hoc processes on specific issues, i.e. marine litter). These bodies could be mobilized to investigate new issues and provide advice.

This would require new collaborative efforts between or among these scientific bodies but would also bring efficiencies and better results.

3) EU and its Member States

Improving the interface between science and policy is vital in technically complex fields such as SMCW. At the multilateral level, it is important to continue to preserve the impartiality of the work of existing scientific bodies. In addition, overarching assessments could be relevant for state of the art knowledge and advice on issues of concern, and for the broader inclusion of academic perspectives from developing countries and emerging economies.

At the national level, technical and scientific advice should also be sound, unbiased, legitimate and based on evidence, including the work carried out by existing bodies at the multilateral level. The guidelines prepared by the OECD are a good example, which Governments may follow at the national level. It is also essential to maintain socio-economic considerations separate from scientific and technical advice provided to policy and decision-makers.

4) Germany

Strengthen the science-policy interface to bring sustainable chemical innovations to achieve the SDG's faster to the markets and to implementation.

5) Greenpeace

We have particular interest in the science-policy interface mentioned in the co-chairs' summary report. From our perspective, it will be necessary but not sufficient only to strengthen the existing scientific bodies currently advising different aspects of global chemical and waste sound management work. Just as the somewhat fragmented existing chemical and waste instruments will require an overarching framework to ensure co-ordination and to fill the gaps, so the existing relevant scientific bodies, which normally sit ONLY under, or work ONLY for, one of these existing instruments, would also benefit substantially from consolidation. We see a huge potential for greater collaboration, streamlining, or even merging of separate working groups and/or task-forces under one overarching scientific panel/body, in order to enhance the breadth and depth of strategic guidance, improve coherence and synergy, avoid duplication of work, and increase efficiency and credibility of policy decision-making on global chemical and waste work. There could also be significant financial benefits from such consolidation.

An overarching panel might also enable more timely and consistent responses within potential action areas under SAICM and beyond 2020, e.g. EPIs. We fear that the current lack of a stable, strong and credible overarching scientific body under SAICM, may well have contributed in part to the relatively slow progress on such issues. Furthermore, such a global overarching scientific body could provide the critical mass necessary in order to encourage engagement of the wider scientific community with relevant expertise on chemical and waste issues, which has not so far been mobilized as effectively as it could. By analogy, many scientists & civil society organisations around the world have been mobilized by the critical mass of the IPCC within the field of climate science. We hope the document in Annex 1 which was originally prepared for UKCSF could serve as a contribution to this broad issue.

The importance of scientific information in sound chemical management has been emphasized in the Overarching Policy Strategy (OPS) of SAICM, on risk reduction, knowledge and information, as well as capacity building and technical cooperation. The role of science in SAICM and beyond-2020 agenda-setting is perhaps of most relevance in relation to issues of concern, the nominations of which, along with any subsequently adopted resolutions, must be based on sound science, showing the link between chemical exposures and effects on human health and the environment¹.

Abundant experience has been gained under other international mechanisms to demonstrate the importance and value of a credible and transparent scientific panel or advisory group in guiding timely and informed decision-making through provision of scientific expertise and advice, e.g. IPCC (Intergovernmental Panel on Climate Change) for UN Framework Convention on Climate Change, POPRC (POPs Review Committee) of the Stockholm Convention, CRC (the Chemical Review Committee) under the Rotterdam Convention, the Scientific Groups of the London Convention/

London Protocol on the Prevention of Marine Pollution by Dumping of Wastes and Other Mater, and GESAMP (Join Group of Experts on the Scientific Aspects of Marine Environmental Protection) for different UN systems.

Although precise models and mandates vary among those science panels, the core principles are similar in each case, including an ability for such bodies to work independently of vested interests to provide high-quality scientific advice and reports on both established and emerging issues of relevance to those instruments, drawing upon other expertise as required. In the case of chemicals management, such an interface could, for example, consider evidence relating to substances and groups of substances under regulation or of emerging concern in a transparent way, and could suggest concrete and focused action if mandated, with a credibility and, therefore, authority of which is internationally accepted. This model was preferred in the “Chemicals and Waste Governance Beyond 2020” report by Nordic Council of Ministers, which was presented to the Brazil meeting.

In the same report, it was suggested that ways should be sought to utilize more effectively the existing scientific panels that focus on chemicals and waste, in order to avoid duplication and extra costs.

Taking all of these into consideration, IPCP could serve as a strong candidate or, at least, an established and credible starting point to fill this gap, which has also been mentioned in the Nordic Council report.

6) IPEN

The actual proposal is not certain, though some have suggested formation of a body to address scientific issues. It is not clear what tangible problem this proposal is trying to address. In many instances, acting on existing scientific evidence is a stronger need than collecting additional information (e.g. the listing of the paraquat formulation and chrysotile asbestos is still pending under the Rotterdam convention despite very clear data and recommendations from the CRC). All the emerging policy issues and issues of concern that have been proposed and worked on during SAICM so far, have been solidly justified and no extra scientific body would have altered or improved decision-making on them. Considering the serious resource challenges facing chemical safety implementation, a funded scientific body would be a low priority compared to many other pressing concerns. If such a body were to be considered, then very precise terms of reference would be needed to ensure that all appropriate stakeholder groups are able to fully participate and that the full spectrum of scientific and public health disciplines related to chemical safety are actively engaged. In addition, strict measures to prevent conflict of interest and bias would need to be instituted to protect scientific integrity in policy decisions.

7) USA

We agree with the below point that it is important to recognize and cooperate with existing entities and mechanisms for provision of scientific advice on chemicals and waste, but we do not believe there is a need for a new mechanism. Also, the Overarching Policy Strategy includes several activities related to science and technical exchanges. It would be useful to include more of those concepts here.

8) WHO

Recognize that the link between science and policy is not always direct since there are other considerations, drivers and facts - besides scientific facts - that need to be taken into account and addressed in policy decisions, especially at the global scale.

9) IPCC

It should be recognized that academic scientists in the field of chemicals and waste have much to offer to the SMCW, but in comparison to other stakeholders such as non-governmental organizations and industry are much less organized and coordinated with respect to policy-related work. Thus, in contrast to the fields of climate change and biodiversity, only a small number of academic scientists have been individually called in by some ministries and agencies, whereas the majority of academic scientists are neither participating nor represented in the current science-policy discussion of chemicals and waste. As a consequence, the academic community has a rather limited voice in the current science-policy interface in the field of chemicals and waste. Accordingly, a future, strengthened science-policy interface should leverage existing associations of academic scientists, engage scientists globally, and facilitate a harmonized contribution of the academic community, similarly to the Intergovernmental Panel on Climate Change and Working Groups under the Convention on Long-Range Transboundary Air Pollution.

It should be recognized that a strong science-policy interface should facilitate bidirectional communication, and thus, promote the co-production of science and policy in the field of chemicals and waste, including perspectives from developing and developed countries: scientific evidence from exploratory research can grow stronger if the policy context defines a need for additional research, and, similarly, a weak policy context can become stronger if confirmatory scientific evidence is produced. The future, strengthened science-policy interface should therefore have at least the following functions:

- a. to monitor and evaluate the progress of science, identify new and

emerging issues, and inform decision-makers about those issues;

- b. to monitor and evaluate progress on methods for monitoring and reporting in support of policy initiatives; and
- c. to monitor and evaluate progress of policy, identify fields where gaps in the relevant science exist and are critical, and inform scientists about these gaps.

The future, strengthened science-policy interface with the engagement and involvement of the academic community may be established both on the national/regional and international levels in the following ways:

- a. On the national level, one route of more actively including academic scientists could be through continuous, broad outreach by national agencies and ministries. This could be similar to the current practices, but may also be enhanced through regular dialogue between agencies/ministries and the academic community in individual countries.
- b. On the international level, governments may wish to provide financial support for the coordination and facilitation of the academic community to be present at international meetings and conferences to provide scientific and technical inputs as well as for scientists to understand the existing research needs and better organize future research activities within the academic community to fill these gaps.

The future, strengthened science-policy interface should be neutral (i.e., without financial conflict of interest), independent, transparent and science/facts-oriented.

10) The NGO Forum for Health

The fundamental challenge is to bring to bear clear evidence from scientific research and to give scientific findings a clear pathway to the decision-making table at multi-lateral and global levels, and ultimately at national level.

Annex 4: Survey sent to relevant stakeholders to collect data during the development of the gap analysis report

General

1. Name of science-policy interface body (SPI body):
2. Your contact details (name, affiliation, email):

Organisation and governance structures

3. How is the SPI body organized? Is the SPI body a subsidiary or independent body?
4. Who are the members of the SPI body?
5. How are the members/experts selected and appointed and according to which criteria?
6. Are rules and procedures in place to identify and minimize conflicts of interest amongst members of the SPI body?
☐ Yes
☐ No
7. If yes, could you please specify what they are (or point out to us where we may find such information)?
8. Which procedures or rules are in place to ensure academic credibility and independence?
9. Is the SPI body open to observers?
☐ Yes, to all stakeholders
☐ Yes, to invited stakeholders
☐ No
☐ Other:
10. What is the budget of the SPI body (incl. in-kind contributions)? How is the SPI body financed? How is transparency in the financing process ensured?

Terms of reference (mandate and scope)

11. What is the geographical scale covered by the SPI body, and please specify region(s) in “Other...”, if applicable:
 - ☐ Global
 - ☐ Regional
 - ☐ National
 - ☐ Local
 - ☐ Others:
12. Which chemicals or groups of chemicals are covered by the SPI body?
13. Are chemical management issues (e.g. chemical information exchange along the value chain) covered by the SPI body, in addition to chemicals or groups of chemicals? If yes, could you please provide one or two examples in “Other...”
 - ☐ Yes
 - ☐ No
 - ☐ Other
14. Which stage(s) of the following chemical lifecycle are covered by the SPI body?
 - ☐ Production and packaging
 - ☐ Transport and storage
 - ☐ Trade
 - ☐ Use
 - ☐ Reuse, recycling and recovery
 - ☐ Disposal
 - ☐ Other:
15. Which aspects are covered by the SPI body?
 - ☐ Environmental aspects
 - ☐ Human health-related aspects
 - ☐ Both of the above
 - ☐ Other:
16. What are the mandates of the SPI body?
17. How is the work program of the SPI body decided? E.g. by whom?
18. How would you categorize the work of the SPI body?

	NO OR LOW	MODERATE	HIGH
Relevance of the SPI body to International Chemicals Management	☐	☐	☐
Degree of specialization of the SPI body in the field of chemicals management	☐	☐	☐

19. Could you please provide more details regarding the work areas of the SPI body? If your answer is “yes” or “other”, please specify below.

	YES	NO	OTHER
Does the SPI body provide scientific assessment of new issues and/or policy measures upon request?	☐	☐	☐
Does the SPI body provide scientific support in monitoring and evaluation of the progress of implementation and/or the effectiveness of relevant measures?	☐	☐	☐
Does the SPI body identify issues of concern and inform policy-makers?	☐	☐	☐
Does the SPI body facilitate science-policy dialogue (e.g. development of joint strategies)?	☐	☐	☐
Does the SPI body actively synthesize and disseminate scientific information in certain fields?	☐	☐	☐
Does the SPI body work on capacity building?	☐	☐	☐
Does the SPI body inform relevant scientists about policy development?	☐	☐	☐
Does the SPI body coordinate scientific inputs for policy calls?	☐	☐	☐
Does the SPI body have other work areas?	☐	☐	☐

20. Examples of scientific assessment of new issues and/or policy measures upon request
21. Examples of scientific support in monitoring and evaluation of the progress of implementation and/or the effectiveness of relevant measures
22. Examples of identification of issues of concern

- 23. Examples of facilitation of science-policy dialogue
- 24. Examples of active synthesis and dissemination of scientific information in certain fields?
- 25. Examples of capacity-building
- 26. Examples of activities to inform scientists about policy developments
- 27. Examples of activities to coordinate scientific inputs for policy calls
- 28. Examples of other work areas

Outputs

- 29. What are the SPI body's outputs (e.g. assessments, technical guidelines, recommendations, etc.)?
- 30. Is there a transparent review process of the SPI body's outputs? If yes, how does it work?
- 31. Who has ownership of the outputs of the SPI body (e.g. SPI body, governments)?

Network

- 32. Is there communication and coordination with other SPI bodies? If yes, with which ones?
- 33. Does the SPI body actively expand its network? Does it reach out to universities?

Developing countries and countries with economies in transition

- 34. Are processes or rules in place to ensure that the circumstances and needs of developing countries and countries with economies in transition are taken into account? If yes, which?

Annex 5: Additional information pertaining to the interface bodies considered in the gap analysis presented in this report

1. Outputs

OUTPUT	TYPE OF OUTPUT	SPI BODY
SCIENTIFIC / TECHNICAL OUTPUT	Assessments (e.g. scientific and technical assessments, screening assessments)	Basel OEWG, POPRC, SAP, EMEP, CLRTAP WG Effects, AMAP, OECD EHS, UNITAR, IRP, FAO/WHO JECFA, FAO/WHO JMPR
	Reviews of scientific information (e.g. Thematic Review papers – GCO)	Basel OEWG, EMEP, CLRTAP WG Effects, GCO, IRP, IPCP, FAO/WHO JECFA, FAO/WHO JMPR, GESAMP
	Technical guidelines (e.g. monitoring guidelines, standards for the testing of chemicals)	Basel OEWG, EMEP, CLRTAP WG Effects, AMAP, PEN, OECD EHS, GEF STAP, FAO/WHO JECFA, FAO/WHO JMPR, FAO/WHO JMPM, GESAMP
	Scientific/technical guidance documents and manuals, advice	Basel OEWG, SCE GHS, GMP, WHO CRAN, GEF STAP, IRP, IPCP, Protocol on PRTRs, FAO/WHO JECFA, FAO/WHO JMPR, FAO/WHO JMPM, GESAMP
	Reports (e.g. on the status of implementation of protocols, systems, etc.)	GCO, SCE GHS, UNEP EDC AG, WHO CRAN, GEF STAP, Protocol on PRTRs, FAO/WHO JECFA, FAO/WHO JMPR, GESAMP
	Tools, databases, inventories	WHO CRAN, UNITAR, IRP, Protocol on PRTRs, FAO/WHO JECFA, FAO/WHO JMPR, GESAMP
	Summaries for policy-makers, guidance documents for policy-makers	CRC, AMAP, GCO, IRP, Protocol on PRTRs, GESAMP
LEGAL INSTRUMENTS	Legal instruments (recommendations to the COP, rationales, decisions, draft resolutions)	CRC, SCE GHS, OECD EHS, FAO/WHO JECFA

OUTPUT	TYPE OF OUTPUT	SPI BODY
OUTPUT CONCERNING FUNCTIONING OF THE SPI BODY	Meeting and workshop reports, reviews on activities, workplans	Basel OEWG, CRC, POPRC, EMEP, CLRTAP WG Effects, SCE GHS, GEF STAP, IRP, IPCP, Protocol on PRTRs, FAO/WHO JECFA, FAO/WHO JMPR, FAO/WHO JMPM, GESAMP
OUTREACH	Outreach products, awareness raising materials	SAP, AMAP, GMP, UNEP EDC AG, IRP, Protocol on PRTRs
OTHER	Other	SCE GHS: Guidance material to assist organizations involved in capacity-building GMP: Strategy planning, demonstration projects, information gathering and exchange UNITAR: Management plans IPCP: Statements, e.g. Zürich Statement on Future Actions on Per- and Polyfluoroalkyl Substances (PFASs) FAO/WHO JECFA: Monographs

- There is a marked preponderance of scientific/technical output, especially in the form of assessments and technical guidelines. Some of these are destined for scientists (e.g. technical guidelines, tools, databases), whereas others are destined for policy-makers. That output is predominantly scientific/technical in nature reflects the fact that the science to policy function is the most important function amongst the SPI bodies. Few SPI bodies publish outreach or awareness raising materials, or recommendations, decisions, draft resolutions or other legal instruments.

2. Review process for outputs

All of the SPI bodies for which information is available state that they have a review process for their outputs. The review processes are more or less well defined and more or less complex. They range from simpler processes or rules, such as:

- An “open process on development of outputs, before, during and after OEWG” (Basel OEWG)
- Comments from CRC-internal reviewers on task group reports and decision guidance documents (CRC)

- Internal national review and independent peer review (AMAP)
- Peer review similar to a typical scientific publication review process (GEF STAP)

to more complex processes and rules, such as:

- Multiple rounds of reviews with hundreds of international experts and a physical meeting to discuss reviews (SAP, Scientific Assessment of Ozone Depletion)
- Several rounds of comments on draft outputs solicited from Parties and observers, and draft outputs placed on website for public viewing and comments. A document listing all comments and how they were handled is also put on the website. A contact group open to all observers is set up to review and revise the outputs based on comments (POPRC)

3. Ownership of results

WHO HAS OWNERSHIP OF RESULTS?	EXAMPLES
THE SPI BODY ITSELF	CRC, POPRC, AMAP/Arctic Council, IPCC, UNITAR
THE HOST ORGANIZATION	GEF STAP (host organization: GEF Partnership), WHO CRAN (WHO), IRP (UNEP), SCE GHS (UN), AMAP (Arctic Council), FAO/WHO JECFA (FAO and or WHO), GESAMP (8 sponsoring agencies)
THE MEMBER COUNTRIES OF THE SPI BODY	OECD EHS
THE PARTNERS WHO GENERATE THE OUTPUT	UNEP's programs (GMP, PEN, DDT Alliance, UNEP EDC AG) – but if activity funded by UNEP, then UNEP shares ownership of the output. UNITAR also shares ownership of output with its partners.
VARIOUS OR OTHER STAKEHOLDERS	AMAP: Scientists retain rights to intellectual property etc. AMAP encourages scientists to make use of work performed in AMAP assessments in e.g. preparation of publications for the scientific literature. AMAP data and graphical and other products are generally accessible and available for use, especially e.g. educational use, including data accessible online from AMAP thematic data centers.
	Basel OEWG: Parties and other stakeholders (e.g. subsidiary bodies established under the Convention that report to the OEWG, observers) own the results, as appropriate.

4. Organizational structure

SPI BODY	FORM OF SPI BODY	ORGANIZATIONAL ELEMENTS
Under MEAs		
BASEL OEWG	Subsidiary body	Bureau composed of 2 co-chairs, 2 vice-chairs, 1 rapporteur
CRC	Subsidiary body	Bureau composed of 1 chair, 4 vice-chairs
POPRC	Subsidiary body	1 chair (elected by COP), 1 vice-chair (elected by Committee)
SAP	Subsidiary body	Scientific Steering Committee (co-chairs and 4 other prominent scientists), Coordinating Lead Authors, Lead authors, Assessment Coordinator
EMEP	Subsidiary body ⁱ	Coordination of EMEP's operation by 5 programme centers and 4 task forces, which report annually to the EMEP Steering Body. Steering Body reports to the Executive Body of the Convention.
CLRTAP WG EFFECTS	Subsidiary body	Bureau composed of 1 chair and 5 vice-chairs. 6 International Cooperative Programmes and a Task Force on Health
PROTOCOL ON PRTRS	n/a because not a distinct SPI body ⁱⁱ	
SCE GHS	Subsidiary body	1 Chairperson and 1 vice-chairperson. Correspondence groups (informal groups)
Associated with MEAs		
GMP	Partnership	GMP's governing body: Partnership Advisory Group (PAG), which consists of the leads of all 8 partnership areas, nominees from the area leads, UN Environment, and other participants invited by the Secretariat.
PEN	Network	Coordinated by the Secretariat of the PEN, which is hosted by UN Environment Chemicals and Health Branch. PEN is comprised of an Advisory Committee and PEN members.

SPI BODY	FORM OF SPI BODY	ORGANIZATIONAL ELEMENTS
DDT ALLIANCE	Alliance	Alliance consists of a Steering Committee (15 members, and a Coordinator), 5 Thematic Groups and an Assembly.
Not directly associated with MEAs		
UNEP EDC AG	Advisory group	Established by UNEP, representatives nominated through members of the SAICM bureau and representatives from major groups and stakeholders.
GCO	n/a because not technically an SPI body, but a process	
OECD EHS	n/a because not a distinct SPI body ¹¹	
WHO CRAN	Network	A Network Coordinating Group is convened by WHO. Secretariat and planning support provided by WHO Department of Public Health, Environmental and Social Determinants of Health.
WHO IPCS	Joint programme	Joint programme of WHO, ILO and UNEP. WHO is the Executing Agency of the IPCS. Organizational structure is composed of the Central Unit (CU) (WHO Programme for the Promotion of Chemical Safety acts as CU), the Intersecretariat Coordinating Committee, the Programme Advisory Committee, Task Groups and Working Groups.
FAO/WHO JECFA	Independent expert committee	WHO and FAO Joint Secretaries are responsible for providing secretariat support, organizing meetings, etc., and a WHO JECFA Secretariat and a FAO JECFA Secretariat each invite experts with expertise in their respective fields.
FAO/WHO JMPR	Independent expert ad hoc body	The JMPR comprises the WHO Core Assessment Group and the FAO Panel of Experts on Pesticide Residues in Food and the Environment. There are a Joint FAO/WHO Secretariat of the Meeting, a WHO JMPR Secretariat and a FAO JMPR Secretariat.
FAO/WHO JMPM	Joint programme	JMPM consists of members from the FAO Panel of Experts on Pesticide Management and the WHO Panel of Experts on Vector Biology and Control. Both are statutory bodies of their respective Organizations. There is a FAO/WHO Joint Secretariat of the JMPM.

SPI BODY	FORM OF SPI BODY	ORGANIZATIONAL ELEMENTS
UNITAR	n/a because not a distinct SPI body ^{II}	
GEF STAP	Independent body	GEF STAP is a corporate body of the GEF.
IRP	Partnership	The partnership consists of a Panel, a Steering Committee and a Secretariat.
GESAMP	Advisory body	GESAMP is managed through an Executive Committee consisting of a representative of each Sponsoring Organization and the Chairperson and two Vice-Chairpersons of GESAMP. Working Groups are set up to carry out substantive work.
IPCP	Network	The 3 organs of the IPCP are: General Assembly, Board and Auditors.
AMAP	Working group	AMAP is a working group of the Arctic Council and has a Secretariat.

- I. The Steering Body to EMEP is a subsidiary body to the Executive Body, the supreme governing body to the Convention.
 - II. These “SPI bodies” are not distinct SPI bodies that have their own organizational structures. Rather, they are (intergovernmental) bodies that conduct relevant activities at the chemicals and waste science-policy interface; these activities are integrated in the activities/functioning of the broader organization. The organization structures of these bodies are therefore not included here. The SPI work relating to the Protocol on PRTRs is carried out by UNECE.
- The SPI bodies are predominantly organized either as subsidiary bodies (all of the SPI bodies under MEAs are subsidiary bodies) or as collaborative mechanisms such as networks, partnerships, alliances or joint programs.
 - Other forms that SPI bodies take are independent bodies/committees, advisory groups/bodies and working groups.

5. Membership

SPI BODY	WHO ARE THE MEMBERS?
Under MEAs	
BASEL OEWG	Representatives of all interested Parties
CRC	31 experts in chemicals management, nominated by governments and appointed by the COP.
POPRC	31 members. Members of the Committee are government-designated experts in chemical assessment or management from Parties.
SAP	Selected experts who are qualified in the field of atmospheric science and internationally recognized as such.
EMEP	Each Party participating in the session shall be represented by a delegation consisting of a head of delegation and other representatives and advisers from national environment agencies or national research institutes.
CLRTAP WG EFFECTS	Each Party participating in the session shall be represented by a delegation consisting of a head of delegation and other representatives and advisers from national environment agencies or national research institutes.
PROTOCOL ON PRTRS	n/a, as not a distinct SPI body
SCE GHS	79 participants: Governments (there are member states and non-member states of the body) and UN funds and programs (UNEP) and specialized agencies (ILO, IMO, WHO), UN related organizations (UNITAR), IGO (OECD), NGOs (consultative with ECOSOC and others)
Associated with MEAs	
GMP	180 partners comprised of governments, NGOs, businesses and industry associations, and academia.
PEN	About 450 members: governments, IGOs, donors, PCB holders, NGOs, industry, experts/academia and business sectors relevant to PCB.

SPI BODY	WHO ARE THE MEMBERS?
DDT ALLIANCE	Membership is open. All stakeholders including organizations and individuals engaged within the scope of developing and deploying alternatives to DDT for disease vector control are invited to take part. Professional experts who are committed to the development and deployment of alternatives to DDT may join as Individual members.
Associated with MEAs	
UNEP EDC AG	14 members, 10 representatives from governments, as well as representatives from major groups and stakeholders (including IGOs, NGOs, academia and industry).
GCO	Steering Committee composed of representatives from governments, IGOs, academia, civil society and private sector, selected so as to ensure regional and gender balance as much as possible. Approximately 30 experts. Also external executing partners.
OECD EHS	36 member countries
WHO CRAN	The Network welcomes contributions from the following entities undertaking work towards its overall objective: Government and public health institutions, IGOs, professional societies, WHO Collaborating Centres, NGOs in official relations with WHO and any other entity with expertise concerning chemical risk assessment.
WHO IPCS	No current information was found – in the 1990s, 32 member states and national institutions were committed to the Programme through MoU.
FAO/WHO JECFA	Experts with chemical and toxicological expertise, as well as other expertise considered essential given the items on the agenda of specific meetings.
FAO/WHO JMPR	Experts who attend as independent internationally-recognized specialists who act in a personal capacity and not as representatives of national governments.
FAO/WHO JMPM	Members drawn from the FAO Panel of Experts on Pesticide Management and the WHO Panel of Experts on Vector Biology and Control.
UNITAR	Not a distinct SPI body but within UNITAR as a whole, worldwide recognized senior experts provide international expertise to countries and organizations, to advance their approaches to management of chemicals, supported by a team of project officers based within UNITAR's offices.

SPI BODY	WHO ARE THE MEMBERS?
GEF STAP	Panel Members, who are internationally recognized experts in the GEF's key areas of work. One Panel Member is responsible for the Chemical and Waste focal area of the GEF. The Panel Members are supported by a global network of experts and institutions.
IRP	Open to all parties.
GESAMP	17 experts drawn from a wide range of relevant disciplines, who act in an independent and individual capacity.
IPCP	The IPCP network is open to academic scientists from all over the world to become members.
AMAP	The eight Arctic countries: Canada, Kingdom of Denmark, Finland, Iceland, Norway, Russian Federation, Sweden, United States; 6 Permanent Participants (representatives of Arctic Indigenous Peoples organizations: Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, Sami Council).

6. Conflict of interest

6.1. Are procedures or rules in place to minimize conflicts of interest amongst members?

ARE PROCEDURES OR RULES IN PLACE TO MINIMIZE CONFLICTS OF INTEREST AMONGST MEMBERS?	SPI BODIES
Yes	CRC, POPRC, EMEP, CLRTAP WG Effects, WHO CRAN, GEF STAP, IRP, IPCP, FAO/WHO JECFA, GESAMP
No	GMP, PEN, DDT Alliance, UNEP EDC AG, AMAP, OECD EHS

6.2. Procedures or rules utilized to minimize conflict of interest

TYPE OF PROCEDURE OR RULE	SPI BODIES	DETAILS
CODE OF CONDUCT/ TERMS OF REFERENCE	CRC, POPRC	Clear rules include: no gifts, or benefits from persons, groups or organizations with dealings with the CRC, no preferential treatment.
	WHO CRAN	Rules in Terms of Reference include “Such entities [wishing to become Network Participants] shall be free from concerns which are primarily of a commercial or profit-making nature. Donations must not be subject to any perceived or real conflicts of interest and must comply with the applicable WHO rules”.
	GEF STAP	The GEF STAP is governed by conflict of interest policies applicable to the GEF and UNEP.
	IRP	Rules outline a separation of roles and responsibilities between scientists and government representatives.
DECLARATION OF INTERESTS	CRC, POPRC, IPCP, FAO/WHO JECFA, FAO/WHO JMPM, WHO IPCS	Rules state that activities, including business or financial interest, must be disclosed through a declaration of interests form (relating to real, apparent or potential conflicts of interest due to personal or professional involvement with commercial entities).
	WHO CRAN	Network Participants or those expressing interest in becoming Network Participants shall complete a standardized questionnaire, which seeks information concerning the status of the entity and the nature of the contribution it will make towards the Network.
	UNITAR	Various policies are in place at UNITAR to prevent conflicts of interest, including a Policy on Financial Disclosure, Declaration of Interest, and Impartiality Statements.
RULES REGARDING CREDENTIALS	EMEP, CLRTAP WG Effects	Rules state that credentials of all representatives (of Parties) shall be submitted to the secretariat. Where new protocols or amendments to the Convention or to one of its protocols other than amendments to the annex to the EMEP Protocol are to be adopted, the credentials shall be issued either by the Head of State or Government or by the Minister of Foreign Affairs or, in the case of a regional economic integration organization, by the competent authority of that organization. Pending a decision on their credentials, delegates may participate provisionally in the meeting but not vote.

TYPE OF PROCEDURE OR RULE	SPI BODIES	DETAILS
COMPLIANCE WITH RULES AND PROCEDURES	CRC, POPRC	Governments have primary responsibility in ensuring compliance (which may go beyond laws of a country). During mandate of experts, if situation of conflict of interest arises, Secretariat can discuss with the expert, government, bureau and or COP, with the possibility to temporarily suspend the expert from some or all activities of the CRC. COP decides at next session on the matter.
	WHO CRAN	WHO shall be solely responsible for reviewing the questionnaires completed by Network Participants and for all decisions relating to acceptance of Network Participants.
	IPCP	Members can be excluded from the network if they seriously violate its by-laws, incl. regarding conflicts of interest.
NO EXPLICIT RULES	AMAP	Rules as such do not exist; however, experts are expected to comply with general principles of scientific integrity and respect for their peers. In the event of a conflict of interest, expert group leads and/or the AMAP WG would become involved, if necessary, to find a resolution.
	SCE GHS	No apparent explicit rules regarding conflicts of interest.
	GESAMP	A template for new GESAMP working groups (published 2018) states that it is necessary for each agency, in consultation with the working group Chairperson, to identify potential conflicts of interest, and devise suitable steps to address this, if required. However, there are no further details on how to achieve this.

6.3. Procedures or rules to ensure academic credibility and independence

TYPE OF PROCEDURE	SPI BODIES	EXAMPLES
PEER REVIEW OF OUTPUTS	Basel OEWG, CRC, POPRC, SAP, AMAP, OECD EHS, GEF STAP, IRP	See point 2 ('Review process for outputs').
EXTERNAL MECHANISM	GMP	Partners are responsible for ensuring their own work's academic credibility.
INTERNAL MECHANISM	GMP, PEN, DDT Alliance, UNEP EDC AG	Internal bodies, such as the advisory committee (PEN), the Steering Committee (DDT Alliance) or members of the SPI body (UNEP EDC AG), are responsible for ensuring academic credibility and independence.
REGULATIONS, CODES AND POLICIES	JECFA, JMPR, JMPM, CRAN, IPCS	WHO policies include Code of conduct for responsible research, Code of ethics and professional conduct, Regulations for expert advisory panels and committees, Regulations for study and scientific groups, collaborating institutions, and other mechanisms of collaboration, Publishing policies and clearance procedures for publications, Handbook for guideline development.
	UNITAR	UNITAR policies include the Integrity and Ethics Oversight policy and the Anti-Fraud and Anti-Corruption Policy, as well as UN system-wide ethics policies.
PRACTICES TO AVOID LOBBYING	POPRC	Common practice during plenary meetings that observers only invited to speak after all members who wish to do so have taken the floor and to restrict the discussion leading up to a decision of the Committee only to members. Observers have been invited to limit themselves to providing relevant technical formation, to abstain from arguing for one or the other of the options before the Committee or to interact with members of the Committee during plenary meetings. Proposals from observers have not been addressed by the Committee unless supported by a member of the Committee.
RULES IN CASE A MEETING'S OBJECTIVITY IS DISPUTED	CRC, POPRC	Where the objectivity of a particular meeting has been called into question, the Conference of the Parties shall define the conditions for the disclosure of all relevant information.

7. Observers

	IS THE SPI BODY OPEN TO OBSERVERS?			
NAME OF SPI BODY	Yes, to all stakeholders	Yes, to invited stakeholders	No	Other
Under MEAs				
Basel OEWG	●			
CRC		●		
POPRC		●		
SAP			●	
EMEP		●		
CLRTAP WG Effects		●		
Protocol on PRTRs	●			
SCE GHS		●		
Associated with MEAs				
GMP	●			
PEN	●			
DDT Alliance	●			
Not directly associated with MEAs				
UNEP EDC AG	●			
GCO	●			
OECD EHS		●		
WHO CRAN		●		
WHO IPCS		●		
FAO/WHO JECFA			●	

	IS THE SPI BODY OPEN TO OBSERVERS?			
NAME OF SPI BODY	Yes, to all stakeholders	Yes, to invited stakeholders	No	Other
FAO/WHO JMPR			●	
FAO/WHO JMPM		●		
UNITAR		●		
GEF STAP	●			
IRP		●		
GESAMP		●		
IPCP	●			
AMAP ¹				●

- I. All observers to the Arctic Council are observers to AMAP; for specific work tasks other organizations may be invited to participate in AMAP activities at the discretion of the AMAP Working Group Heads of Delegation of AMAP members and the Working Group Chair.
- Nearly all SPI bodies are open to observers. About half are open to all stakeholders, and half only to invited stakeholders. Only SAP of the Montreal Protocol, FAO/WHO JECFA and FAO/WHO JMPR are not open to observers.



SAICM/OEWG.3/INF/22



**Strategic Approach
to International
Chemicals Management**

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on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4 of the provisional agenda*

**Progress towards the achievement of the 2020 overall objective
of the sound management of chemicals**

A submission by UNEP - Analysis of Stakeholder Submissions on Sustainable Chemistry Pursuant to UNEA Resolution 2/7

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, an analysis of stakeholder submissions on sustainable chemistry pursuant to UN Environment Assembly Resolution 2/7. The report is presented in the annex as received from the United Nations Environment Programme and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Analysis of Stakeholder Submissions on Sustainable Chemistry Pursuant to UNEA Resolution 2/7

A report from the United Nations Environment Programme

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Executive Summary

This report responds to a mandate provided through Resolution 2/7, adopted at the second session of the United Nations Environment Assembly in 2016. The resolution requested stakeholders having relevant experience with the issue of sustainable chemistry to submit best practises by June 2017 and the Executive Director of UN Environment to prepare a report in the first quarter of 2018 analysing the information received.

Following an introduction, Section 2 of the report provides a snapshot of initiatives and actions by stakeholders referring to sustainable chemistry that were identified via desk research. It notes that the concept is widely used by stakeholders around the world, with some having developed a definition (e.g. the Organisation for Economic Co-operation and Development). Green chemistry, a related and complimentary concept focusing on scientific aspects of chemistry, is also briefly discussed.

Section 3 presents an analysis of submissions made by stakeholders in response to Resolution 2/7. The submitted cases address various stages of the chemical and waste life cycle and illustrate stakeholder perceptions that sustainable chemistry plays a role in achieving the Sustainable Development Goals Target 12.4 on the sound management of chemicals and wastes and related aspects of Sustainable Development Goal 12 on sustainable consumption and production (e.g. resource efficiency). The cases also address and highlight the contribution of sustainable chemistry to other Sustainable Development Goals and Targets (e.g. zero hunger, climate change). This provides an expanded and complementary view concerning the role of chemistry in achieving broader development objectives, taking into account environmental, social and economic sustainability dimensions. Given that an agreed international definition or assessment framework to identify best practises in sustainable chemistry does not exist, all submitted cases were taken into account and their inclusion does not imply any judgement by UN Environment.

Section 4 provides an analysis of findings from a survey undertaken by UN Environment to elicit feedback from stakeholders on the sustainable chemistry concept. Responses reveal a broad understanding and interpretation of sustainable chemistry. In response to the question how sustainable chemistry could contribute at the international level, the idea of sustainable chemistry being seen as a reference or assessment framework that helps to analyse the contribution of chemistry to all three dimensions of sustainable development and implementation of the 2030 Agenda for Sustainable Development received the strongest support. Sustainable chemistry as a new type of chemistry and/or as a destiny or end goal to be achieved were also supported by a large majority. The majority of respondents also felt that (despite some stakeholders having developed a definition) an international definition of sustainable chemistry would be valuable.

Section 5 concludes that sustainable chemistry is seen by stakeholders as an important component to achieve the sound management of chemicals and waste and is therefore relevant for the discussions on chemicals and waste management beyond 2020. Stakeholder perspectives also suggest that the concept helps to examine the contribution of chemistry in achieving the broader 2030 Agenda Sustainable Development Goals and Targets, such as zero hunger, climate action, safe housing, workers' health, innovation, and gender equality, while addressing all three dimensions of sustainable development. However, since it is not a scientific term, but rather a socially constructed concept, the exact nature of sustainable chemistry, what it entails and how it can contribute needs further reflection. Given the interest of stakeholders, including many from developing countries, in the concept, a practical starting point could be to develop a better understanding of sustainable chemistry opportunities globally. This could include development of practical guidance on sustainable chemistry as well as exploring how developing countries could be supported in potential related capacity building efforts.

Introduction

Resolution 2/7 on the sound management of chemicals and waste, adopted by the United Nations Environment Assembly at its second session, held on 23-27 May 2016, in section III, paragraph 20 to 21 invited “countries, international organizations and other interested stakeholders, including the private sector, having relevant experience with the issue of sustainable chemistry to submit to the United Nations Environment Programme secretariat, by 30 June 2017, best practices, indicating how these may enhance the sound management of chemicals, inter alia through the implementation of the 2030 Agenda for Sustainable Development, as well as the Strategic Approach to International Chemicals Management and chemicals- and waste-related multilateral environmental agreements”.

The resolution also requested the Executive Director “to prepare a report in the first quarter of 2018 analysing the information received to assist the Strategic Approach to International Chemicals Management in considering the opportunities presented by sustainable chemistry, including linkages to sustainable consumption and production policies, and the possibilities that sustainable chemistry may offer of contributing to the achievement of the 2030 Agenda”.¹

This report responds to this mandate. It provides a brief review of initiatives by stakeholders explicitly referring to sustainable chemistry identified through desk research, analyses stakeholder submissions made in response to Resolution 2/7, and summarizes results of a UN Environment Survey on the topic, administered in 2017 through collaboration of the Chemicals and Health Branch, Economy Division, UN Environment and the Secretariat of the Basel, Rotterdam and Stockholm Conventions. The report concludes with a brief and forward-looking analysis with the aim to advance a global understanding of sustainable chemistry, as the international community is undertaking the intersessional process to prepare by 2020 recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020, initiated through the International Conference on Chemicals Management.

Since an agreed international definition or reference/assessment framework to identify best practises in sustainable chemistry does not exist, all submitted cases were considered in this report, with the exception of those which did not provide sufficient information and where no references were provided. In light of the above, references to “best practices” or sustainable chemistry cases mentioned in this report do not imply any judgement by UN Environment. Hereinafter, the term ‘cases’ is used to refer to what stakeholders provided in response to the invitation to submit best practices. In line with the mandate received, the purpose of this report is not to develop or propose a definition of sustainable chemistry, but rather to share information and facilitate further discussions at the international level.

¹ *UNEA Resolution 2/7. Sound management of chemicals and waste. UNEP/EA.2/Res.7, section III, paragraph 20 to 21. United Nations Environment Programme, Nairobi.*

1. Sustainable Chemistry: A Snapshot of Initiatives and Actions

The sustainable chemistry concept has been used by a number of initiatives and a range of stakeholders for many years. Closely related activities are undertaken within the framework of, and using the term ‘green chemistry’, including in many developing countries and countries with economies in transition.² A wide range of initiatives have been undertaken over the past decades that could be considered to be compatible with concepts such as green chemistry and sustainable chemistry.

Sustainable chemistry is seen to be a holistic concept by many (further discussed below), as mirrored in the use of the word “sustainable”, reflecting reference to the 2030 Sustainable Development Agenda and its three dimensions (economic, social and environmental). Green chemistry is specified through the widely cited 12 principles which focus on “safer” and less resource intensive chemistry (see Box 1). It has been defined as “the utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and applications of chemical products”.³ Green chemistry can thus be seen as focusing on scientific aspects of chemistry. The use of the term “chemistry” in the sustainable chemistry concept can be understood as implicating a similar focus; yet, as further discussed in this report, a number of stakeholder perspectives suggest a wider scope. Many stakeholders use the terms green and sustainable chemistry interchangeably.

1. Prevention: it is better to prevent waste than to treat or clean up waste after it has been created.
2. Atom economy: synthetic methods should be designed to maximize the incorporation of all materials used in the process into the final product.
3. Less hazardous chemical syntheses: wherever practicable, synthetic methods should be designed to use and generate substances that possess little or no toxicity to human health and the environment.
4. Designing safer chemicals: chemical products should be designed to affect their desired function while minimizing their toxicity.
5. Safer solvents and auxiliaries: the use of auxiliary substances (e.g. solvents, separation agents) should be made unnecessary wherever possible and innocuous when used.
6. Design for energy efficiency: energy requirements of chemical processes should be recognized for their environmental and economic impacts and should be minimized. if possible, synthetic methods should be conducted at ambient temperature and pressure.
7. Use of renewable feedstocks: a raw material or feedstock should be renewable rather than depleting whenever technically and economically practicable.
8. Reduce derivatives: unnecessary derivatisation (use of blocking groups, protection/ deprotection, temporary modification of physical/chemical processes) should be minimized or avoided if possible, because such steps require additional reagents and can generate waste.
9. Catalysis: catalytic reagents (as selective as possible) are superior to stoichiometric reagents.

² Examples of green chemistry initiatives include the Royal Society of Chemistry’s journal ‘Green Chemistry’, the International Union of Pure and Applied Chemistry’s International Conferences on Green Chemistry, the Green Chemistry and Commerce Council, the United Nations Industrial Development Organization global green chemistry project funded by the Global Environment Facility, and Green Chemistry Institute of the American Chemical Society, which has chapters in more than twenty countries, including Argentina, China, India, and South Africa (RSC. (2018). *Green Chemistry*. Weblink (accessed 14 February 2018); IUPAC. (2018). *8TH IUPAC International Conference on Green Chemistry*. Weblink (accessed 14 February 2018); GC3. (2018). *Advancing Green Chemistry Across Sectors and Supply Chains*. Weblink (accessed 14 February 2018); ACS. (2018). *ACS Green Chemistry Institute*. Weblink (accessed 22.02.2018).

³ (Anastas, P.T. and Warner, J.C. (1998). *Green Chemistry: Theory and Practice*. pp.11, 30. Oxford University Press. London).

10. Design for degradation: chemical products should be designed so that at the end of their function they break down into innocuous degradation products and do not persist in the environment.
11. Real-time analysis for pollution prevention: analytical methodologies need to be further developed to allow for real-time, in-process monitoring and control prior to the formation of hazardous substances.
12. Inherently safer chemistry for accident prevention: substances and the form of a substance used in a chemical process should be chosen to minimize the potential for chemical accidents, including releases, explosions, and fires.

Box 1: The 12 Principles of green chemistry (Anastas and Warner 1998)

Given the focus of the UNEA resolution on sustainable chemistry, and in light of the significant number of green chemistry initiatives, this section provides a brief and non-comprehensive overview of initiatives which explicitly use the term ‘sustainable chemistry’, identified through desk research. This overview does not seek to assess the impact or relevance of the initiatives, e.g. in advancing the sound management of chemicals and waste or implementation of the 2030 Agenda, but rather seeks to provide an illustration of its use by a wide range of stakeholders. Moreover, initiatives using related concepts such as “sustainability of chemistry”, “sustainable chemical industry”, or “sustainable chemicals”, although also closely related, are also not covered.⁴ Future work could explore these and other related concepts in more detail.

2.1 Academia and Civil Society

Academic conferences

Since 2003 and every second year, the ‘International Conference on Green and Sustainable Chemistry’, sponsored by a range of academic, research and other institutions around the world, is organized in different countries and regions with the aim of highlighting significant advances related to the discovery, development and application of green and sustainable chemistry and engineering leading to the betterment of the human condition.⁵ Since 2016, Elsevier is holding the ‘Green and Sustainable Chemistry Conference’ series. Organised on an annual basis and featuring a number of speakers and participants from developing countries, the conference’s objective is to bring together international researchers from academia and industry, from authorities and other institutions to communicate and share the latest developments across the broad and diverse fields of green and sustainable chemistry.⁶ Conferences are also being organized in developing countries and economies in transition. For instance, the ‘Asia-Oceania Conference on Green and Sustainable Chemistry’, organized since 2007, has among others been hosted in India and the People’s Republic of China.⁷

⁴ There are a number of initiatives using these terms, for instance the ‘Road Map Document for a Sustainable Chemical Industry’ (European Commission. Weblink (2013). (accessed 27.02.2018), the ‘Guide on Sustainable Chemicals’ (German Environment Agency. (2011). Weblink (accessed 27.02.2018), the Boston Consulting Group’s ‘Making a Business Case for Sustainability of Chemicals’ (BCG. (2017). Weblink (accessed 27.02.2018), and the voluntary commitment of BASF to beat pollution via a methodology to assess sustainability across the product portfolio made at the third session of the United Nations Environment Assembly (UN Environment (2017). Annex 4: #BeatPollution Voluntary Commitments from Business. United Nations Environment Programme, Nairobi.).

⁵ Nature. (2017). *8th International Conference on Green and Sustainable Chemistry*. Weblink (accessed 14 February 2019).

⁶ Elsevier. (2018). *3rd Green & Sustainable Chemistry Conference*. Weblink (accessed 14 February 2018). Abstracts submitted for the conference include a discussion of green and sustainable chemistry education in India, submitted by researchers from the People’s Education Society University (Veerabhadraswamy, M and Anilkumar, H. G. (n.d.). *Propagation of green and sustainable chemistry education in Indian context – An overview*. Weblink (accessed 27.02.2018).

⁷ The Energy and Research Institute. (2015). *The 5th Asia-Oceania Conference on Green and Sustainable Chemistry*. Weblink (accessed 27.02.2018); City University of Hong Kong. (2016). *6th Asia-Oceania Conference on Sustainable and Green Chemistry*. Weblink (accessed 27.02.2018)

Academic journals and literature

Several academic journals focus on sustainable chemistry. This includes the American Chemical Society's 'Sustainable Chemistry and Engineering' journal, founded in 2013 to address challenges of sustainability in the chemical enterprise and advance principles of green chemistry and green engineering.⁸ Elsevier's 'Sustainable Chemistry and Pharmacy', launched in 2015, employs an interdisciplinary approach and aims to contribute to a better understanding of concepts related to sustainable chemistry or sustainable pharmacy, including the circular economy.⁹ Elsevier's journal 'Current Opinion in Green and Sustainable Chemistry' seeks to advance a better understanding where and how chemistry itself can be made more sustainable and whereby chemistry can contribute to sustainability in general.¹⁰ In addition, numerous articles published in various scientific journals feature titles using the term sustainable chemistry, including from a developing country perspective.¹¹ A recent publication by Anastas and Zimmerman (2018) explored the potential of sustainable chemistry in contributing towards the achievement of the Sustainable Development Goals (SDG)¹².

Curricula and research

The concept of sustainable chemistry has also been integrated in curricula of universities, under the heading of sustainable chemistry research, courses and Master's programmes. For example, the Research Institute for Sustainable Chemistry established by the National Institute of Advanced Industrial Science and Technology in Japan is engaged in research and development of sustainable chemistry since 2015.¹³ Sustainable chemistry is also a research priority area at the University of Amsterdam, with a total equivalent of 90 dedicated researchers.¹⁴ McGill University in Canada recently launched the 'Creating Sustainable Materials for the Future' transdisciplinary research programme under its 'Sustainability Systems Initiative', that focuses on the design, development, evaluation and use of safe and sustainable materials (i.e., functional materials and molecules)¹⁵. Universities offering postgraduate courses on sustainable chemistry include the University of Valencia, the University of Nottingham, Leuphana University, the New University of Lisbon and the University of Venice.¹⁶ As another example, the European Association for Chemical and Molecular Sciences is organizing regular European Sustainable Chemistry Awards to recognise individuals or small research groups which make an outstanding contribution to sustainable development by applying green and sustainable chemistry.¹⁷

Universities are also the origin of start-up initiatives seeking to advance sustainable chemistry. In the context of a workshop in 2017 on 'Advancing Entrepreneurship and Start-up Initiatives for Sustainable

⁸ ACS. (2018). *ACS Sustainable Chemistry & Engineering*. Weblink (accessed 14 February 2018).

⁹ Elsevier. (2018). *Sustainable Chemistry and Pharmacy*. Weblink (accessed 14 February 2018).

¹⁰ Elsevier. (2018). *Current Opinion in Green and Sustainable Chemistry*. Weblink (accessed 14 February 2018).

¹¹ Barra, R. and Gonzalez, P. Sustainable chemistry challenges from a developing country perspective: Education, plastic pollution and beyond. *Current Opinion in Green and Sustainable Chemistry*, 9:40-44. <https://doi.org/10.1016/j.cogsc.2017.12.001>.

¹² Anastas, P.T. and Zimmerman, J.B. (2018). The United Nations sustainability goals: how can sustainable chemistry contribute? *Current Opinion in Green and Sustainable Chemistry*. <https://doi.org/10.1016/j.cogsc.2018.04.017>

¹³ AIST. 2018. *Research Institute for Sustainable Chemistry*. Weblink (accessed 14 February 2018).

¹⁴ University of Amsterdam. (2018). *Suschem at the UvA*. Weblink (accessed 14 February 2018).

¹⁵ Mc Gill University. (2019). *Creating Sustainable Materials for the Future*. Weblink (accessed 15.02.2019).

¹⁶ The University of Nottingham. (2018). *Green and Sustainable Chemistry MSc*. Weblink (accessed 14 February 2018); The University of Valencia. (2018). *Master's Degree in Sustainable Chemistry*. Weblink (accessed 14 February 2018); Faculdade de Ciencias e Ecnologia. (2018). *Phd in Sustainable Chemistry*. Weblink (accessed 27.02.2018); and Ca' Foscari University of Venice. (2018). *Master's Degree Programme in Sustainable Chemistry and Technologies*. Weblink (accessed 14 February 2018); Leuphana University of Lüneburg. (2018). *Institute of Sustainable and Environmental Chemistry*. Weblink (accessed 12 October 2018).

¹⁷ EuChems. (2017). *European Sustainable Chemistry Award*. Weblink (accessed 14 February 2018).

Chemistry: Learning from Case Studies’, several case examples were provided by researchers from Universities and research institutions, including from Colombia and Nigeria.¹⁸ Moreover, universities are partnering with the private sector in the field of sustainable chemistry: In 2013, the São Paulo Research Foundation (FAPESP) and a British pharmaceutical company announced the creation of a ‘Centre of Excellence for Sustainable Chemistry’ in Brazil.¹⁹

Civil society

The International Persistent Organic Pollutants Elimination Network, comprised of several hundred participating organizations in more than hundred countries, presented a document exploring the role and potential of green chemistry and sustainable chemistry in order to inform discussions at the first meeting of the intersessional process to prepare recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020.²⁰ On the occasion of the ‘Conference on Mainstreaming Sustainable Chemistry’ (Berlin, 17-18 May 2017), the International Persistent Organic Pollutants Elimination Network and Women in Europe for a Common Future presented a position paper providing recommendations relevant for the concept, supported by a large number of civil society organizations.²¹ Some civil society organizations are referring to sustainable chemistry on their websites, for example The Natural Step International²², which links the concept to the question of how the potential of chemical to contribute to sustainability can be unlocked.

As an example of concrete action, during the workshop on ‘Advancing Entrepreneurship and Start-up Initiatives for Sustainable Chemistry: Learning from Case Studies’, a non-governmental organization based in Ghana presented a project advancing organic farming.²³ The concept of sustainable chemistry has also been picked up by the World Economic Forum, occupying, for example, a prominent role in the forthcoming report on ‘Collaborative Innovation towards the Sustainable Development Goals’²⁴.

2.2 Private Sector

Initiatives using the term ‘sustainable chemistry’ by the private sector are being undertaken throughout the supply chain by the chemical industry, downstream industries and retailers. The chemical company Solvay, for example, dedicated itself to the achievement of five objectives “for a sustainable chemistry by 2025”, framed under the headings to “contribute to society, innovate sustainable solutions, and act responsibly”.²⁵ Dow Chemicals developed a ‘Sustainable Chemistry Index’ as a means of evaluating products, such as life cycle benefits and social needs. Dow Chemicals committed itself to the ‘2015 Goal on Sustainable Chemistry’ to, among others, “increase the percentage of sales to 10 percent for products that are highly advantaged by sustainable chemistry”, as assessed via the index.²⁶

¹⁸ UN Environment. (2017). *Advancing Entrepreneurship and Start-up initiatives for Sustainable Chemistry: Learning from Case Studies* (UN Environment. Weblink (accessed 27.02.2018).

¹⁹ GlaxoSmithKline. (2013). GSK to create a new Centre of Excellence for Sustainable Chemistry in Brazil. Weblink (accessed 27.02.2018).

²⁰ IPEN. (2017). *Beyond 2020: Green chemistry and sustainable chemistry*. Weblink (accessed 22.02.2018)

²¹ IPEN and WECF. (2017). *Beyond 2020: Sustainable Chemistry – NGO recommendations*. Weblink (accessed 22.02.2018)

²² <https://thenaturalstep.org/chemicals/>

²³ UN Environment. (2017). *Advancing Entrepreneurship and Start-up initiatives for Sustainable Chemistry: Learning from Case Studies* (UN Environment. Weblink (accessed 27.02.2018).

²⁴ World Economic Forum (2018). *Chemistry and Advanced Materials Collaborative Innovation towards the Sustainable Development Goals*. Forthcoming Report. Cologny.

²⁵ Solvay. (2017). *Our objectives by 2025 for a sustainable chemistry*. Weblink (accessed 14 February 2018).

²⁶ Dow. (2015). *2015 Sustainability Goals: The Sustainable Chemistry Index*. The Dow Chemical Company, Midland.

In the downstream textile sector, the Zero Discharge of Hazardous Chemicals Programme, which includes a collaboration of a number of brands, value chain affiliates and associations, commits itself to support the “widespread implementation of sustainable chemistry across the textile and footwear industries”.²⁷ In the retail sector, the multinational corporation Walmart launched the ‘Walmart Commitment to Sustainable Chemistry’ in 2013. As part of the policy, Walmart developed a set of sustainable chemistry principles, including pledges to encourage “full ingredient transparency”, advance the development of chemicals that “preserve efficacy of function while reducing toxicity”, and “reduce its consumables chemical footprint” via participation in the Chemical Footprint Project.²⁸

Furthermore, start-up companies are being created with the aim of advancing sustainable chemistry. On the occasion of the ‘Sustainable Chemistry Conference: the way forward’, held in 2015 in Berlin, Germany, entrepreneurs presented innovative scientific solutions with a potential to reduce, re-use and recycle expensive and harmful chemicals.²⁹ Initiatives are also underway in developing countries and economies in transition. During the workshop on ‘Advancing Entrepreneurship and Start-up Initiatives for Sustainable Chemistry: Learning from Case Studies’, entrepreneurs from Brazil, India, South Africa, and Ghana shared their case examples.³⁰ Start-ups from developing countries have also been recognized at the Elsevier Foundation’s yearly ‘Green and Sustainable Chemistry Challenge’³¹. As another example, in 2014, an investment company from South Africa, partnered with the ‘Sustainable Chemistry Alliance’ and the ‘Bio-industrial Innovation Centre’ to advance the commercialization of life science and bio-industrial technologies.³²

2.3 Public Sector

In 2014, SusChem, the European Technology Platform for Sustainable Chemistry, was launched as a European Union supported initiative in 2014 to revitalise and inspire European chemistry and industrial biotechnology research, development and innovation in a sustainable way. The European Union has also released a publication, which presents the objectives and main achievements of 18 selected projects funded under the 5th and 6th Framework Programmes in the fields of novel materials and sustainable chemistry.³³ Moreover, the International Sustainable Chemistry Collaborative Centre was launched in 2017 as an initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the German Environment Agency, which is also reflected in a voluntary commitment to beat pollution made by the Government of Germany at the third session of the United Nations Environment Assembly in December 2017.³⁴

A recently published technology assessment on chemical innovation prepared by the United States (US) Government Accountability Office (GAO) explored “the opportunities, challenges, and federal roles in sustainable chemistry”³⁵. Among others, the report investigates varying stakeholder definitions and

²⁷ ZDHC. (2017). *Commitment to Sustainable Chemistry Strengthens with Six New Contributors Joining ZDHC*. Weblink (accessed 14 February 2018).

²⁸ Walmart. (2017). *Walmart Commitment to Sustainable Chemistry*. Weblink (accessed 14 February 2018).

²⁹ German Environment Agency. (2015). *Sustainable Chemistry Conference 2015*. Weblink (accessed 10 October 2018).

³⁰ UN Environment. (2017). *Advancing Entrepreneurship and Start-up initiatives for Sustainable Chemistry: Learning from Case Studies* (UN Environment). Weblink (accessed 27.02.2018).

³¹ Elsevier. (2018). *Elsevier Foundation Green and Sustainable Chemistry Challenge*. Weblink (accessed 12 October 2018).

³² Sustainable Chemistry Alliance. (2011). *Sustainable Chemistry Alliance, Bioindustrial Innovation Centre to Collaborate with South African Incubator on Commercialization*. Weblink (accessed 27.02.2018).

³³ European Commission. (2008). *Novel materials and sustainable chemistry – A decade of EU-funded research*. ISBN 978-92-79-09721-8. Luxembourg: Office for Official Publications of the European Communities.

³⁴ ISC3. (2017). *International Sustainable Chemistry Collaborative Centre: Who we are*. Weblink (accessed 14 February 2018); UN Environment (2017). *Annex 2: #BeatPollution Voluntary Commitments from Governments*. United Nations Environment Programme, Nairobi.

³⁵ United States Government Accountability Office. (2018). *Chemical Innovation – Technologies to Make Processes and Products More Sustainable*. Weblink (accessed 12 October 2018).

assessments of sustainable chemistry, and discusses relevant technologies. The report finds that “stakeholders lack agreement on how to define sustainable chemistry and how to measure or assess the sustainability of chemical processes and products”, noting that “these differences hinder the development and adoption of more sustainable chemistry technologies”. The report also identified various themes that stakeholders and the literature associate with sustainable chemistry, including resource efficiency, reduction or elimination of the use or generation of hazardous substances, ensuring chemistry innovation contributes to all three dimensions of sustainable development and a life-cycle perspective. Also in 2018, the draft “Sustainable Chemistry Research and Development Act”³⁶ was introduced in the US Senate. The draft Act foresees among other a “Roadmap for Sustainable Chemistry”, including the development of “a working framework of attributes characterizing sustainable chemistry”.

In developing regions, the Government of Vietnam and the Government of Ghana, with support of the ‘Deutsche Gesellschaft für Internationale Zusammenarbeit’, hosted national workshops in 2017 to take stock of, and develop recommendations for action in the area of sustainable chemistry. The Governments of Ghana and Germany also joined forces, in cooperation with UN Environment and the Secretariat of the Basel, Rotterdam and Stockholm Conventions, to organize side events on sustainable chemistry at the second session of the United Nations Environment Assembly and during the 2017 Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions.³⁷

2.4 Intergovernmental Organizations

In 1998, Member countries of the Organisation for Economic Co-operation and Development endorsed the implementation of an initiative on sustainable chemistry, with a focus on prevention as a means of transforming the chemicals sector.³⁸ The Organisation for Economic Co-operation and Development published several reports on sustainable chemistry, including on the ‘Need for Research and Development Programmes in Sustainable Chemistry’ and on ‘Sustainable Chemistry: Evidence on Innovation from Patent Data’.³⁹ It is also implementing projects related to sustainable chemistry and has developed a definition of sustainable chemistry.⁴⁰ Moreover, it developed defined sustainable chemistry as “a scientific concept that seeks to improve the efficiency with which natural resources are used to meet human needs for chemical products and services. Sustainable chemistry encompasses the design, manufacture and use of efficient, effective, safe and more environmentally benign chemical products and processes”. The definition further notes that sustainable chemistry “is also a process that stimulates innovation across all sectors to design and discover new chemicals, production processes, and product stewardship practices that will provide increased performance and increased value while meeting the goals of protecting and enhancing human health and the environment” and can provide various environmental and social benefits.

In 2017, the Organisation for the Prohibition of Chemical Weapons, in cooperation with the International Council of Chemical Associations and the International union of Pure and Applied Chemistry, organized the ‘Green and Sustainable Chemistry Workshop’ to develop recommendations for improving chemical

³⁶ United States Congress. S.3296 – *Sustainable Chemistry Research and Development Act of 2018*. Weblink (accessed 12 October 2018).

³⁷ BRS Secretariat. (2017). *2017 COPs Side events*. Weblink (accessed 14 February 2018).

³⁸ OECD. (1998). *Proceedings of The OECD Workshop on Sustainable Chemistry Part1*. ENV/JM/MONO(99)19/PART1. Organization for Economic Co-operation and Development, Paris.

³⁹ OECD. (2002). *Need for Research and Development Programmes in Sustainable Chemistry*. ENV/JM/MONO(2002)12. Organization for Economic Co-operation and Development, Paris.

⁴⁰ OECD. (2018). *Sustainable Chemistry*. Weblink (accessed 14 February 2018); OECD. (2012). *The Role of Government Policy in Supporting the Adoption of Green/Sustainable Chemistry Innovations*. ENV/JM/MONO(2012)3. Organization for Economic Co-operation and Development, Paris.

safety and security within industry.⁴¹

At the UN level, in addition to two side events organized at the margins of the second session of the United Nations Environment Assembly and the Conferences to the Parties of the Basel, Rotterdam and Stockholm Conventions in 2017, the 2018-2019 Programme of work of UN Environment, approved by governments at the second session of the United Nations Environment Assembly in May 2016, includes a project concept focusing on sustainable chemistry.⁴² Initial work has commenced through a workshop in 2017 on ‘Advancing Entrepreneurship and Start-up Initiatives for Sustainable Chemistry: Learning from Case Studies’, organized in cooperation with and the United Nations Industrial Development Organization and the International Sustainable Chemistry Collaborative Centre.⁴³ UN Environment and the International Sustainable Chemistry Collaborative Centre also collaborated in the organization of a side event at the 23rd Conference of the Parties to the United Nations Framework Convention on Climate Change in 2017, focusing on the potential of sustainable chemistry in contributing towards climate action. The concept of sustainable chemistry was also highlighted in a speech held in 2017 by the Director-General of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) on the occasion of an award ceremony for research projects proposed by young scientists⁴⁴.

Sustainable chemistry is also among the topics discussed in the context of the intersessional process to prepare recommendations regarding the Strategic Approach and the sound management of chemicals and waste beyond 2020, initiated at the fourth session of the International Conference on Chemicals Management in 2015. Participants at the first meeting of the intersessional process, which took place in Brazil in February 2017, discussed sustainable chemistry both in an informal dialogue and during a plenary session.⁴⁵ A thought starter developed in early 2017 by the Bureau of the fifth International Conference on Chemicals Management informed these discussions through a section on “the role of sustainable chemistry”.⁴⁶ Moreover, the co-chair’s summary of the meeting listed sustainable chemistry among other elements that could be taken into consideration in considering the scope of a future platform for the sound management of chemicals and waste beyond 2020.⁴⁷

⁴¹ OPCW. (2017). *Experts Discuss Role of OPCW in Green and Sustainable Chemistry*. Weblink (accessed 27.02.2018).

⁴² UN Environment. (2016). *UNEA Resolution 2/20. Proposed medium-term strategy for 2018–2021 and programme of work and budget for 2018–2019*. UNEP/EA.2/Res.20. United Nations Environment Programme, Nairobi.

⁴³ The event was organized in 2017 by UN Environment and the International Sustainable Chemistry Collaborative Centre (ISC3), in partnership with the United Nations Industrial Development Organization (UNIDO), the German Chemical Society, the Freie Universität Berlin and the United Nations institute for Training and Research (UNITAR). More information is available on the website of UN Environment

⁴⁴ UNESCO. (2017). *Address by Irina Bokova, Director General of UNESCO on the occasion of the PhosAgro/UNESCO/IUPAC Award-Giving Ceremony*. Weblink (accessed 12 October 2018).

⁴⁵ SAICM Secretariat. (2017). *Report of the first meeting in the intersessional process to consider the Strategic Approach and the sound management of chemicals and waste beyond 2020*. SAICM/IP.1/7. SAICM Secretariat, Geneva.

⁴⁶ SAICM Secretariat. (2017). *Thought starter for the first meeting of the intersessional process*. SAICM/IP.1/4*. SAICM Secretariat, Geneva.

⁴⁷ SAICM Secretariat. (2017). *Co-chairs’ summary of the discussions during the first meeting of the intersessional process to consider the Strategic Approach and the sound management of chemicals and waste beyond 2020*. SAICM Secretariat, Geneva.

2. Analysis of Stakeholder Submissions

3.1 Data Collection and Stakeholder Responses

To facilitate input responding to the invitation in Resolution 2/7 for stakeholders having relevant experience with the issue of sustainable chemistry to submit best practices, indicating how these may enhance the sound management of chemicals, inter alia through the implementation of the 2030 Agenda for Sustainable Development, as well as the Strategic Approach to International Chemicals Management and chemicals- and waste-related multilateral environmental agreements, UN Environment sent an invitation to stakeholders of the Strategic Approach to International Chemicals Management in May 2017, focal points of the Basel, Rotterdam and Stockholm Conventions, and focal points of the Minamata Convention, including a request to disseminate the invitation to relevant stakeholders.⁴⁸ The initial deadline of 30 June 2017 was extended until 30 November 2017. For each case, respondents were requested to briefly introduce the environmental/health context and challenge; describe the case, its benefits and how it contributes to sound management of chemicals and implementation of the SDG; and conclude with lessons learned and future opportunities, if relevant.

In total, 38 stakeholders responded, providing 80 cases (some responses included several cases).⁴⁹ Annex A provides an overview of the institutions/organisations that made submissions. Annex B provides a list of the submitted cases, including a brief summary and the entities undertaking them. The 38 responses originated from a variety of stakeholders. Most responses came from the private sector (ca. 37 %; 14 responses), followed by civil society (ca. 21 %; 8 responses); academia (ca. 18%; 7 responses); the public sector (ca. 18%; 7 responses, including 5 from developing countries and countries with economies in transition); and intergovernmental organizations (ca. 5 %; 2 responses).⁵⁰ All five UN regions were represented, with nearly two-thirds of the responses from the Western European and Others Region, followed by the Asia-Pacific Region and the African Region. In total, 11 responses came from developing countries or countries with economies in transition. In a number of cases, the respondents submitted cases undertaken by other stakeholders. As shown in Figure 3.1, the largest share of the 80 cases is undertaken by the private sector.

Stakeholder Groups Undertaking the Submitted Cases (n = 80)

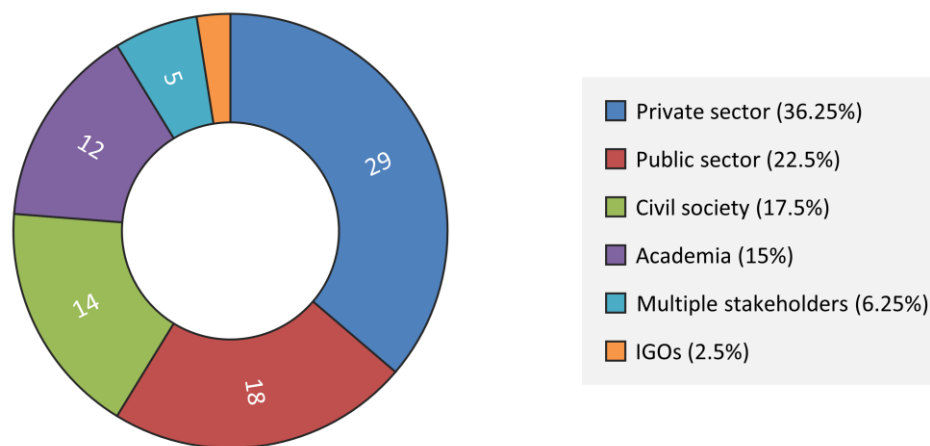


Figure 2.1: Stakeholder Groups Undertaking the Submitted Cases (n = 80)

⁴⁸ The online form can be accessed via this weblink.

⁴⁹ Some responses had to be removed as they were incomplete and/or did not contain any substantive input (i.e. in total there were more than 38 responses). In these cases, and if contact details were provided, the secretariat followed up with the respondents.

⁵⁰ Full submissions are available on request.

3.2 Linkages to the 2030 Agenda, SAICM and the Chemicals- and Waste-related MEAs

Throughout the cases, which ranged from technological interventions to institutional arrangements, numerous indications were provided outlining how the cases contribute to the implementation of the 2030 Agenda for Sustainable Development, the sound management of chemicals and waste, SAICM and the MEAs. An analysis was undertaken in order to identify the number of cases contributing to each of these concepts/agreements. In cases where terminology was used that is similar thought not identical to the listed concepts/agreements but clearly refers to them, these were included in the respective count⁵¹. Some of the 80 cases referred to several of the concepts/agreements, while others referred to none of them.

The results are shown in Figure 3.2. Most common (ca. 39% of cases) were references to the 2030 Agenda, the SDG at large and/or specific SDG and Targets. Also widespread (ca. 30% of cases) were references to the sound management of chemicals and waste or similar terminology⁵². A considerable number of cases (ca. 18%) highlighted how they may contribute to the implementation of SAICM. A number of cases (ca. 11 %) explored linkages to the chemicals and waste-related MEAs, with the Stockholm Convention being the most widely mentioned.

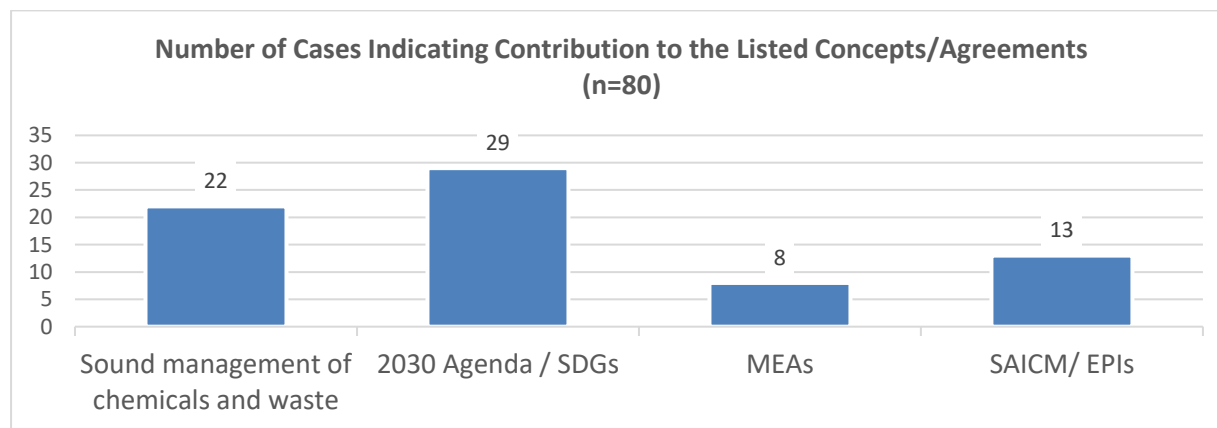


Figure 2.2: Number of Cases Indicating Contribution to the Listed Concepts/Agreements (n=80)
 (notes: some cases referred to several of the concepts/agreements; some cases referred to none; terminology similar to the listed concepts/agreements but clearly referring to them was included in the count)

Exploring in more detail the references made to specific SDG, Figure 3.3 shows how many cases explicitly referred to which SDG, including Targets under that SDG. The most widely referred to Goal was SDG 12 on Sustainable Consumption and Production (mentioned in 18 cases). 13 cases mentioned each of the SDG 3 on Good Health and Well-being, SDG 6 on Clean Water and Sanitation, SDG 8 on Decent Work and Economic Growth, SDG 9 on Industry, innovation and Infrastructure, and SDG 11 on Sustainable Cities and Communities. The most widely quoted Target was Target 12.4.

⁵¹ E.g.: sound chemicals management and SMCW were included under 'sound management of chemicals and waste'; UN Goals and Sustainability Goals were included under '2030 Agenda / SDG' etc.

⁵² E.g. sound chemicals management, SMCW etc.

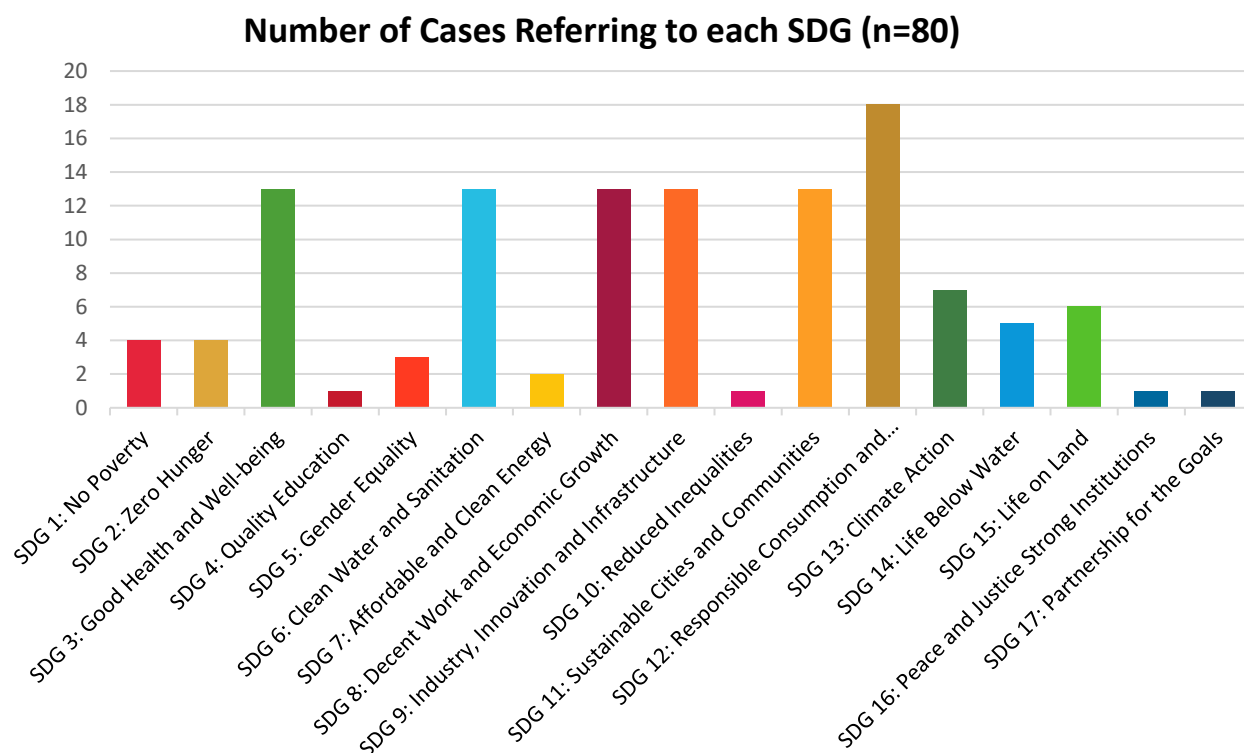


Figure 2.3: Number of Cases Referring to each SDG (n=80) (note: references to targets were included under the respective SDG)

A number of cases outline how they contribute to achieving various SDG and Targets simultaneously⁵³. Meanwhile, none of the cases discussed potential trade-offs across SDG/Targets, i.e. situations where the contribution towards one of the SDG/Targets may come at the expense of progress towards another SDG/Target.

One respondent used an assessment scheme to systematically evaluate cases by judging the extent to which they address aspects related to green chemistry, the sound management of chemicals and waste, and sustainable chemistry (considering characteristics related to ecological, economic and social goals of sustainable chemistry) as well as connections to the 2030 Agenda. This approach is consistent with a holistic interpretation of the sustainable chemistry concept.

3.3 Contribution to SDG Target 12.4

Throughout many of the submitted cases, reference was made how they enhance specific aspects of the sound management of chemicals and waste, in line with SDG Target 12.4, and the related implementation of the chemicals and waste multilateral environmental agreements and the Strategic Approach to International Chemicals Management.⁵⁴ In addition, other elements addressed by SDG 12 on Sustainable Consumption and Production, such as resource efficiency were also covered. In analysing the cases, a number of common themes emerged, addressing all stages of the life cycle. These are noted below, including illustrative examples.

⁵³ See for example case 'UNIDO's Global Chemical Leasing Programme'

⁵⁴ For the five objectives and the eleven basic elements, see: SAICM Secretariat. (2006). *SAICM texts and resolutions of the International Conference on Chemicals Management*. United Nations Environment Programme, Geneva.

Substituting and reducing use of chemicals of concern

A number of cases address the substitution and/or reduction of use of chemicals of concern. In this context, including at the international level (for example in Resolution 2/7 adopted by UNEA), reference is made to “non-chemical alternatives”. This term has been used in various ways, for example to refer to reduction of the use of chemicals of concern by relying on biological processes, process change and the use of approaches such as agroecology. Submissions referring to such approaches suggest that stakeholders consider the concept of sustainable chemistry to go beyond the focus on chemistry in scientific sense as a scientific discipline. Stakeholders have highlighted the need to scale up support and promote such alternatives as a means of preventing the use of chemicals of concern. The below mentioned submissions aim, among others, to protect human health and the environment, reduce water and energy consumption, minimise use of chemicals of concern, and increase use renewable feedstocks and biological processes, while also reducing costs, increasing efficiencies and improving performance.

Some of the cases focus on substitution or reduction in the *production process of chemicals*. For example, cases describe the use of an altered surfactant technology in the production of pharmaceuticals⁵⁵, reliance on bioconversion in the production of ethylene⁵⁶, and replacement of neurotoxic chemicals in the production of pharmaceuticals⁵⁷. Other cases address the substitution of chemicals with safer chemicals in *other industrial production processes*. These include the replacement of a solvent in the production of industrial labels, use of alternatives in the treatment of process cooling water⁵⁸, and the utilization of steel slag to replace strong- and amine-based reagents, for example in CO₂ sequestration.⁵⁹ Several cases address the replacement of chemicals with safer chemicals in a range of *products*, for instance in dishwasher tabs, cans, and flame retardants in insulation foam.⁶⁰ One case describes the use of biomass for the manufacture of ink.⁶¹ Contributing to the implementation of the Minamata Convention on Mercury and the Stockholm Convention on Persistent Organic Pollutants, two cases focus on the *replacement of equipment* with alternatives that do not require the use of mercury and polychlorinated biphenyls, respectively.⁶² Cases also address the replacement of chemicals via reliance on alternative *management approaches*, for example through agroecology.⁶³

Efficient and environmentally sound use & reduction of emissions and exposure

Some cases focus on environmentally sound and efficient use of chemicals and minimizing of chemical emissions and releases in production processes, for example by reducing the use of solvents.⁶⁴ Chemical leasing, promoted among others by the United Nations Industrial Development Organization (UNIDO) in collaboration with its partners, is featured in several cases as an innovative tool, for example for gluing of boxes and for cleaning operations in the automotive sector and hotels.⁶⁵ Another example describes

⁵⁵ Case ‘Removing organic solvents from our processes’

⁵⁶ Case ‘Bioconversion of crude glycerol to ethylene’

⁵⁷ Case ‘Replacement of chemicals of concern used in the production of pharmaceuticals’

⁵⁸ Case ‘Chemical Substitution – Corrosion Inhibitors’

⁵⁹ Cases ‘Kilian – Functional Substitution’; and ‘Utilization of steel slag as a multi-purpose sorbent for pollutants’

⁶⁰ Cases ‘BASF-Trilon M’; ‘CANVERA™ Polyolefin Dispersion for Can Coatings’; ‘BLUEDGE™ Polymeric Flame Retardant Technology’; and ‘ChemSec Marketplace’

⁶¹ Case ‘Prometho GmbH – GrüneTinte’

⁶² Cases ‘Banning of Import; Purchase and Uses of all mercury based equipment’s in health sector of Nepal’; and ‘Promoting PCB Free Metal Fabrication through Technology Transfer’.

⁶³ Case ‘Replacing Chemicals With Biology: Phasing out Highly Hazardous Pesticides with Agroecology’

⁶⁴ For example cases ‘PERO & SAFECHEM – Cleaning of metal parts’; ‘Kilian – Functional substitution’; and ‘Prometho GmbH – GrüneTinte’.

⁶⁵ Two cases entitled ‘Chemical Leasing’; case ‘The German Chemical Leasing Case’; cases ‘Chemical Leasing in automotive parts industry’; and ‘Chemical Leasing in Hotels’

the introduction of chemical leasing in a hospital to reduce the use of disinfectants.⁶⁶ Examples also cover regulatory cases and development of national action plans aiming to reduce the consumption of chemicals, for instance to minimize the use of biocides and plant protection products.⁶⁷ One case provides a tool for benchmarking companies in the selection of safer alternatives and the reduction of their use of chemicals of high concern.⁶⁸

Other cases focus in particular on reducing exposure of vulnerable groups, for example to protect students from lead in paint and children from heavy metals contained in toys or to reduce the exposure of workers to asbestos.⁶⁹ Others seek to minimize risks and adverse impacts by ensuring the environmentally sound handling of chemicals of concern, for example via implementation of the Globally Harmonized System of Classification and Labelling (which is not yet operational in more than 120 countries), improved tracking in the transport of hazardous materials, and safe use of plant protection products.⁷⁰

Waste management, recycling and remediation of pollution

Examples of cases focusing on recycling/re-use include a pilot plant for polymer recycling, further development of the power to gas technology for carbon capture and utilization, and production of carbon black from non-volatile residues of the petrochemical industry.⁷¹ Other cases address waste management and offer end-of-the-pipe solutions to remediate pollution. Examples range from a project to reduce the burning of medical waste, over the introduction of a three-stage wastewater treatment process to separate nitrates from wastewater, to the use of a biocatalyst for the clean-up of oil spills.⁷²

Cross-cutting and enabling topics

In addition to focusing on specific chemical management themes relating to various aspects of the life cycle, some cases cut across the life cycle. Examples include the establishment of an international centre to advance sustainable chemistry and a voluntary chemical industry initiative to build capacity for sound chemicals management.⁷³ Other cases seek to advance a circular economy by addressing the entire value chain. Examples include a tool implemented by major corporations to identify hazardous chemicals and alternatives, which can also be used to guide procurement, product design, standards and policies, a project measuring and disclosing data on business progress to safer chemicals, and the application of green chemistry across supply chains by developing and promoting relevant tools, policies and business practices and by fostering collaboration among relevant stakeholders.^{74,75}

Many of the cases also seek to establish an enabling environment in order to address several or all of the aspects of the life cycle. These include, but are not limited to, innovative business models (e.g. chemical leasing); assessment frameworks and guidance; regulatory measures and governance; awareness-raising

⁶⁶ Cases ‘chemical leasing – efficient and sustainable hospital hygiene’

⁶⁷ Cases ‘5-point Programme for Sustainable Plant Protection’; and ‘Biocides – Proposal for a Concerted European Approach towards a Sustainable Use’.

⁶⁸ Cases entitled ‘Chemical Footprint Project’

⁶⁹ Cases ‘Research based campaign for Mandatory Lead Paint Standard in Nepal’; ‘Campaign for Standard of Children Toys’; and ‘Banning of Import, Sale, Distribution and Uses of Asbestos in Nepal’.

⁷⁰ Cases ‘Capacity Building to Foster the Sound Management of Chemicals’; and National Action Plan on Sustainable Use of Plant Protection Products’.

⁷¹ Cases ‘3M – Recycling of PTFE’, ‘Audi – Power to Gas’; and ‘Waste Heat Recovery’.

⁷² Cases ‘Elimination of POPs and its Sources in Nepal’; ‘Süd-Chemie: Waste Water Treatment’; and ‘EcoBioClean Solves a Global Problem’.

⁷³ Cases ‘The International Sustainable Chemistry Collaborative Centre (ISC3)’; and ‘Capacity Building to Foster the Sound Management of Chemicals’.

⁷⁴ Case ‘Green Chemistry and Commerce Council’

⁷⁵ Cases ‘GreenScreen’; and ‘Chemical Footprint Project’

and advocacy campaigns; capacity building, technology transfer and education; and knowledge and information.

3.4 Contribution to Other SDG in the 2030 Agenda

Many cases explicitly address other SDG and Targets in addition to the 12.4 Target, presenting opportunities how sustainable chemistry contributes to the achievement of the 2030 Agenda across a broader spectrum of SDG and Targets. A number of examples for various SDG are described below. The initial analysis presented here is based on the descriptions provided by the stakeholders and does not imply a judgement as regards their impact and whether the practices may or may not be fully compatible with sustainable development. For example, potential trade-offs may exist in some areas (e.g. if increased use of biomass feedstocks results in increased pressure on soils or deforestation).

Sustainable Development Goal 1: No Poverty

Several cases note contributions to improve living standards, income and access to resources of the poor and vulnerable. For example, one case explains how the establishment of equitable agricultural systems can help to empower farmers and local communities by reducing debt and providing livelihood opportunities.⁷⁶

Sustainable Development Goal 2: Zero Hunger

One case describes how ecosystem-based approaches to pesticide and crop management can help to phase out highly hazardous pesticides, while at the same time increasing food security and providing access to safe and nutritious food.⁷⁷ Other cases explore integrated approaches for sustainable plant protection and sustainable use of plant protection products where they are necessary to ensure sufficient food production.⁷⁸

Sustainable Development Goal 3: Good Health and Well-being

Examples of cases with links to the protection of human health, including vulnerable groups, and reference to the achievement of SDG 3 include an awareness-raising campaign to ban equipment containing mercury from the health sector and the use of chemical leasing to reduce the use of hazardous chemicals and protect workers during industrial cleaning in the automotive sector.⁷⁹

Sustainable Development Goal 5: Gender Equality

Contribution to gender equality features prominently in a case describing how in the context of a cooperation between a chemical company and a cooperative network, a large number of women were engaged, improving their economic and social standing.⁸⁰

Sustainable Development Goal 6: Clean Water and Sanitation

Cases seeking to contribute to SDG 6 include the introduction of a wastewater treatment process allowing improved removal of heavy metal nitrates, and optimization of the process for the production

⁷⁶ Case 'Replacing Chemicals With Biology: Phasing out Highly Hazardous Pesticides with Agroecology'

⁷⁷ Case 'Replacing Chemicals With Biology: Phasing out Highly Hazardous Pesticides with Agroecology'

⁷⁸ Cases 'National Action Plan on Sustainable Use of Plant Protection Products' and '5-point programme for sustainable plant protection'

⁷⁹ Cases 'Banning of Import, Purchase and Uses of all mercury based equipment's in health sector of Nepal'; and 'PERO & SAFECEM – Cleaning of metal parts'.

⁸⁰ Cases 'BASF – Argan program in Morocco'.

of carbon black via waste heat recovery, water recycling and the minimization of odour pollution.⁸¹

Sustainable Development Goal 7: Affordable and Clean Energy

One case describes how improved energy efficiency was achieved via the introduction of an innovative bio-catalytic reaction.⁸² Another case deals with carbon capture and utilization in the automotive sector, explaining how an improved power to gas technology would allow the greenhouse gas-neutral operation of cars.⁸³

Sustainable Development Goal 8: Decent Work and Economic Growth

The protection of workers' health and safety figures prominently in a number of cases, including an awareness-raising campaign targeting the phase out of asbestos use and the development of a pilot plant for polymer recycling.⁸⁴

Sustainable Development Goal 9: Industry, Innovation and Infrastructure

By focusing on research and development, innovation and the establishment of infrastructures for sound chemicals management, most of the cases contribute to the achievement of SDG 9. Some place particular emphasis on these aspects, including the introduction of new technologies, the establishment of pilot plants, and the introduction of novel business models.⁸⁵

Sustainable Development Goal 10: Reduced Inequalities

One of the cases describes a fair-trade agreement between a chemical company and a cooperative network for the production of Argan oil, which allowed the cooperative to grow significantly and sell its product at fixed premium rates, with shares of the profit used to finance literacy programs and health cases.⁸⁶

Sustainable Development Goal 11: Sustainable Cities and Communities:

Several cases were framed as contributing to the provision of safe housing. For example, one case presents action to promote the construction of 'green' buildings by promoting the use of building materials and products that are certified according to meet specified environmental standards.⁸⁷ Another case describes the development of a grow tile for improved binding of the soil, providing increased opportunities for green spaces in urban districts.⁸⁸ Two cases explicitly address the importance of flame retardants for safe housing, both via the use of an assessment tool for safer flame retardants and via the introduction of alternative technologies.⁸⁹

⁸¹ Cases 'Süd-Chemie: Waste Water Treatment'; and 'Waste Heat Recovery'.

⁸² Case 'Green and sustainable technologies to develop a greener and more energy efficient process to manufacture Pregabalin, active ingredient in the drug Lyrica'.

⁸³ Case 'Audi – Power to Gas (PtG)'.

⁸⁴ Cases '3M – Recycling of PTFE'; and 'Banning of Import, Sale, Distribution and Uses of Asbestos in Nepal'.

⁸⁵ For example, the cases 'Audi – Power to Gas, 3M – Recycling of PTFE'; 'Removing organic solvents from our processes, Süd-Chemie: Waste Water Treatment'; and 'Chemistry for Green Building; the German Chemical Leasing Initiative, Chemical Leasing, Chemical Leasing in automotive parts industry'.

⁸⁶ Case 'BASF – Argan program in Morocco'.

⁸⁷ Case 'Chemistry for Green Building'.

⁸⁸ Case 'Dow HYPOL Binder For Improving Technology In A Sustainable Manner'.

⁸⁹ Case 'SAFR®: Integrating exposure with hazard in a new assessment approach for responsible flame retardant solutions'; and 'BLUEDGE™ Polymeric Flame Retardant Technology'.

Sustainable Development Goal 12: Responsible Consumption and Production

Contributions to sustainable consumption and production in addition to Target 12.4 are also covered in a number of cases. For example, several cases emphasise their contribution to Target 12.2 on the efficient use of natural resources, including via transformation of the feedstocks in chemical industry from fossil to regenerative raw materials and methane synthesis for fuelling cars with gas engines.⁹⁰ Other cases note contributions to Target 12.6 by encouraging companies to adopt sustainable practices and integrating sustainability information into their reporting cycle.⁹¹

Sustainable Development Goal 13: Climate Action

Examples of cases addressing SDG 13 addressing climate change include reduction of energy use in cracking in oil refining⁹², the use of sustainable chemistry to improve industrial processes to reduce energy consumption and emissions of greenhouse gases.⁹³ Another case addresses the introduction of renewable feedstocks to replace fossil fuels as front-of-the-pipe intervention in integrated production systems.⁹⁴ The cases also feature the use of sustainable chemistry for carbon capture, in the automotive sector, and in the production of polymers.⁹⁵

3.5 Inputs on the Sustainably Chemistry Concept by Stakeholders

Several stakeholder responses provided complementary views regarding the sustainable chemistry concept. Several of them tend and propose to frame the sustainable chemistry concept in a broad and holistic manner.

A submission by an NGO notes that “at its best, sustainable chemistry could shift the entire industry to safer production and improve environmental protection, consumer safety and occupational health and safety by eliminating hazards.” The submission clarifies that this would require defining sustainable chemistry as including reduction and elimination of hazards of chemicals throughout the life cycle as a priority, including through agroecology. The submission explains that sustainable chemistry attempts to “expand conventional chemistry to include environmental, social and economic aspects”.⁹⁶

Along similar lines, a government submission puts forward a wide-ranging understanding of the sustainable chemistry concept. What qualifies as sustainable chemistry could be assessed based on a set of criteria that address all three dimensions of sustainable development (climate footprint, impacts on the environment, product design, risks to health, economic benefits, transparency, social standards, dialogue and international cooperation, etc.). These indicators are proposed primarily for the purpose of assessing products and processes.⁹⁷

A submission by an industry association, referring to the outcomes of a multi-stakeholder workshop, reiterates the need to consider all three dimensions of sustainable development in exploring the contribution of chemistry to sustainable development. The submission also emphasises the continuing

⁹⁰ Cases ‘Covestro – Dream Production’; and ‘Audi-Power to Gas (PtG)’.

⁹¹ For instance the cases ‘Chemical Footprint Project’; and ‘Green Chemistry and Commerce Council’

⁹² Case ‘Climate Change Mitigation’

⁹³ See for example the cases ‘CANVERA™ Polyolefin Dispersion for Can Coatings; Waste Heat Recovery’; and ‘PERO & SAFECEM – Cleaning of metal parts’

⁹⁴ Cases ‘Biomass Balance approach – A groundbreaking way of using renewable resources in production’

⁹⁵ Cases ‘Audi – Power to Gas (PtG)’ and ‘Covestro – Dream Production’.

⁹⁶ Case ‘Comments on Green Chemistry and Sustainable Chemistry in Response to Resolution 2/7 of the UN Environment Assembly’.

⁹⁷ Case ‘Parameters of Sustainable Chemistry’.

importance of a basic national regulatory infrastructure and availability of information.⁹⁸

A submission by the International Union of Pure and Applied Chemistry (IUPAC) and the Interdivisional Committee on Green Chemistry for Sustainable Development (ICGCSD) discusses the relationship between the concepts of green chemistry and sustainable chemistry, noting that while the terms are often used interchangeably, they may have different meanings in different countries and contexts. The institution notes that green chemistry and sustainable chemistry are not in contrast with each other and emphasises the need to focus on practical applications of both concepts.

⁹⁸ Case 'Convening Diverse Stakeholders on Chemistry in Sustainable Development'

3. Survey on the Sustainable Chemistry Concept

4.1 Data Collection and Stakeholder Responses

In order to better understand stakeholder perceptions of the sustainable chemistry concept globally, UN Environment administered a survey in 2017 under the title: 'UN Environment Survey to Elicit Feedback on the Sustainable Chemistry Concept'. The purpose was to review perspectives, priorities, opportunities and challenges related to sustainable chemistry as seen by stakeholders from the public sector, the private sector and civil society, and to inform a dialogue what sustainable chemistry could mean in a global context.

UN Environment invited stakeholders of the Strategic Approach to International Chemicals Management, focal points of the Basel, Rotterdam and Stockholm Conventions, focal points of the Minamata Convention, as well as other internal and external partners to participate in the survey in May 2017. The initial deadline for submissions was set at 30 June 2017 and extended until 30 November 2017.⁹⁹

The survey received a total of 63 responses. Respondents represented all UN regions (see Figure 4.1). It is worth noting that approximately two thirds of respondents were governments or other stakeholders from developing countries or countries with economies in transition. Responses were received from a variety of stakeholders. As can be seen in Figure 4.2, most responses came from academia. 62 % of respondents were female and 38 % male.

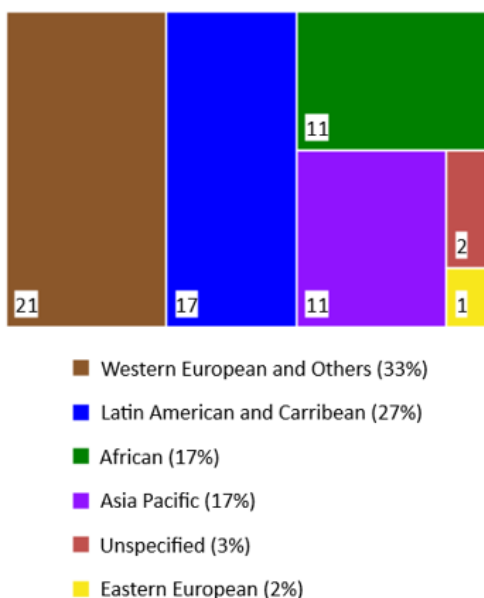


Figure 3.1 Responses by region from different stakeholders (n = 63, rounded percentages)

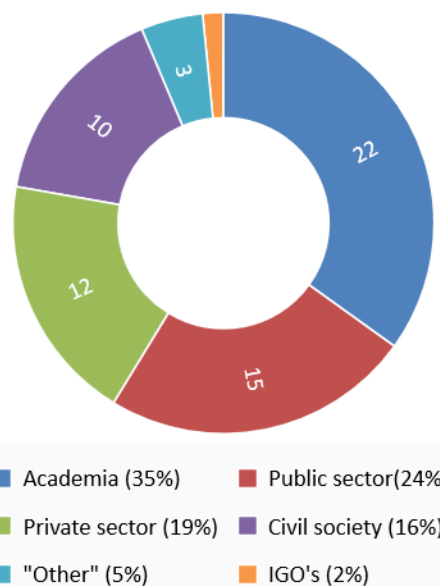


Figure 3.2: Responses by stakeholder groups (n = 63, rounded percentages)

⁹⁹ The online form used for the survey can be accessed via this weblink.

4.2 Stakeholder Perspectives on the Sustainable Chemistry Concept

Perspectives on sustainable chemistry in an international context

A large majority (89 % agreement)¹⁰⁰ of respondents felt that sustainable chemistry is an important component relevant for advancing chemicals and waste management beyond 2020. Asked more specifically concerning three possible perspectives on how the sustainable chemistry concept could contribute in using the concept internationally, all three of the following proposed interpretations were supported (see Figure 4.3). The idea to use sustainable chemistry as an *assessment framework* for evaluating the contributions of chemicals to the SDG received the strongest support (93 % agreement). The perspective that sustainable chemistry is a *new type of chemistry* which is compatible with the three dimensions of sustainable development also received very strong support (88 % agreement). The third option – sustainable chemistry as a *destiny and benchmark* – was seen less favourably, although participants also supported it (74 % agreement).

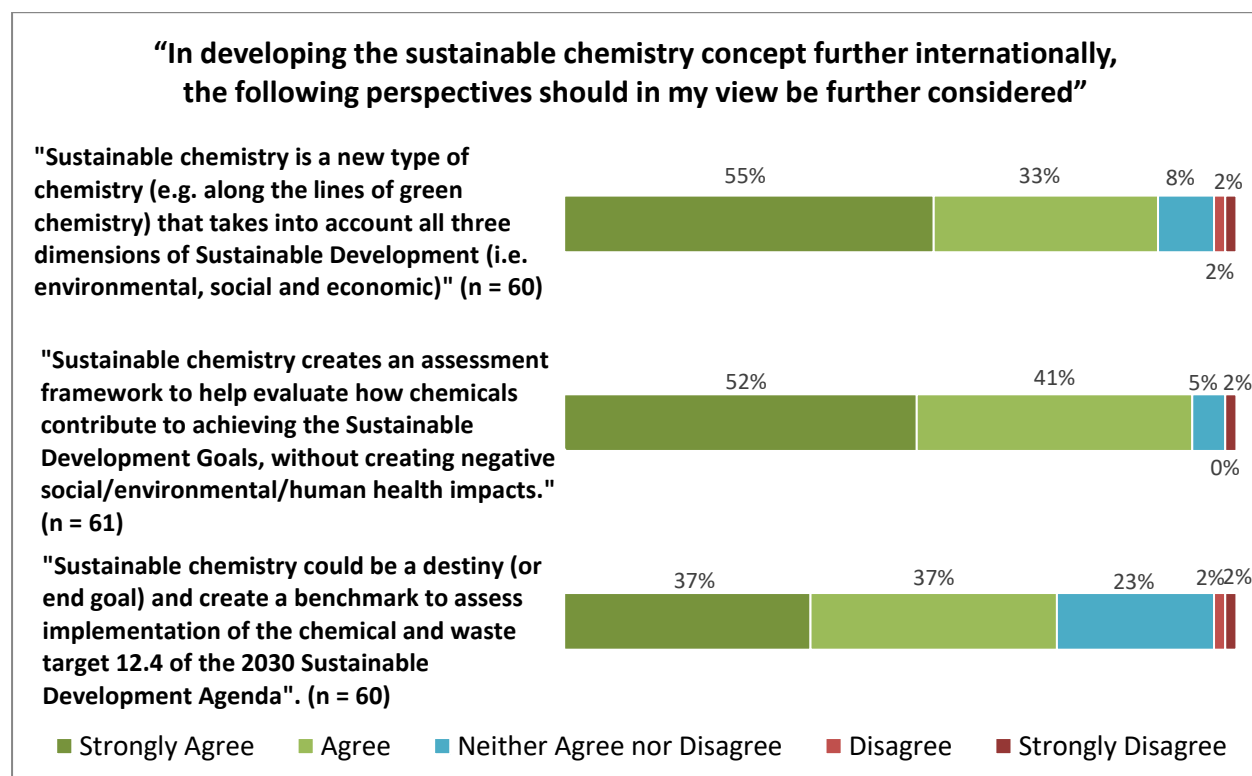


Figure 3.3: Sustainable chemistry in an international context (1) (rounded percentages)

The majority of respondents felt that an international definition of sustainable chemistry would be valuable (see Figure 4.4) and suggested an interest to develop the concept further internationally. Concerning a possible definition, results suggest a slightly higher preference for a detailed international definition compared to a simple one (72 % vs. 67 % agreement). In considering a simple definition, the large majority of participants (79 % agreement) supported a suggested option to frame it along the Brundlandt Commission's definition of sustainable development as follows: "Sustainable chemistry is the design, production, use, recycling and disposal of chemicals to support implementation of the 2030 Agenda for Sustainable Development and meeting the needs of the present, without compromising the

¹⁰⁰ 61 respondents answered this question, i.e. 2 participants abstained

ability of future generations to meet their own needs”.¹⁰¹ A number of written comments provided by participants also support this finding, i.e. to keep the definition as simple as possible. Other written comments recommended to refrain from the attempt to define sustainable chemistry, with some suggesting to focus on addressing concrete areas and examples instead.

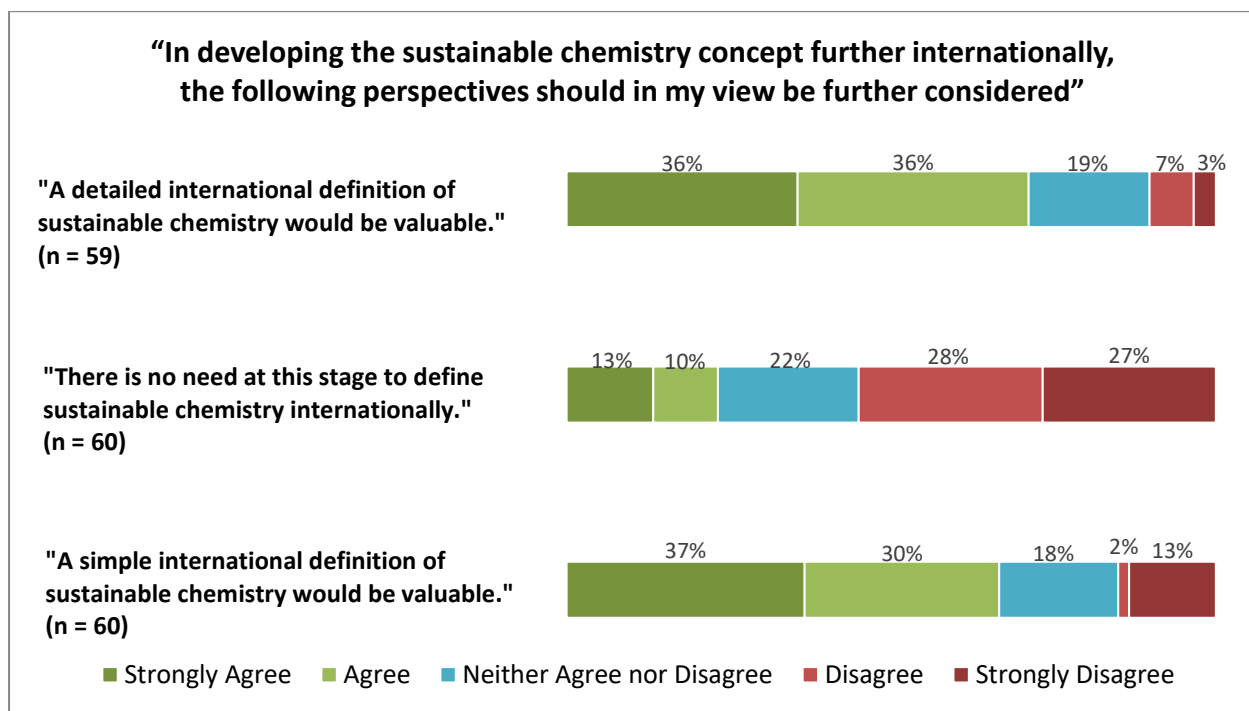


Figure 3.4: Sustainable chemistry in an international context (2) (rounded percentages)

Perspectives on topics covered by sustainable chemistry

The results of the survey indicate that a large majority of respondents strongly agreed or agreed that the sustainable chemistry concept encompasses the following:

- Identification and assessment of chemical and non-chemical alternatives for chemicals of concern (95 % agreement)
- Traditional chemical management tools, such as chemical hazard assessment, risk assessment and risk management (95 % agreement)
- Advancing technology transfer for safe chemicals and non-chemical alternatives (95 % agreement)
- Scaling up innovation through universities, start-up companies, and the chemical industry (91 % agreement)
- Reforming chemistry curricula to integrate green chemistry and sustainable development (90 % agreement)
- Use of economic instruments and innovative financing to advance innovation (82 % agreement)

Additional written comments confirm that participants favour a broad understanding of the sustainable chemistry concept. Through these comments, additional topics, such as the circular economy, life cycle

¹⁰¹ This suggested option is in line with a reference to sustainable chemistry suggestion quote in the European Union publication on ‘Novel materials and sustainable chemistry’ (p. 4) (European Commission. (2008). *Novel materials and sustainable chemistry – A decade of EU-funded research*. ISBN 978-92-79-09721-8. Luxembourg: Office for Official Publications of the European Communities.

assessment and resource efficiency, were also proposed. Several respondents also suggested that sustainable chemistry encompasses all stages of the life cycle and cuts across the entire value chain.

Perspectives on Sustainable Chemistry in a Developing Country Context

The survey results indicate that participants from developed countries as well as from developing countries and economies in transition see sustainable chemistry as holding a potential for developing countries, as shown in Figure 4.5: A large majority of respondents supported the statement that sustainable chemistry creates an opportunity for leapfrogging chemicals management and technologies (81 % agreement in total; 90 % agreement among developed country respondents and 77 % agreement among respondents from developing countries and economies in transition). A large majority also supported the statement that technical assistance and technology transfer is important to advance sustainable chemistry in developing countries (88 % agreement). When distinguishing between responses from developed and developing countries, there was 95 % agreement among developed country respondents and 87 % agreement among respondents from developing countries and economies in transition. Stakeholders also specified some areas considered of importance in advancing sustainable chemistry in a developing country context, for example integration of green chemistry and sustainable chemistry in relevant curricula and use of the Organisation for Economic Co-operation and Development's Substitution and Alternatives Assessment Toolbox.

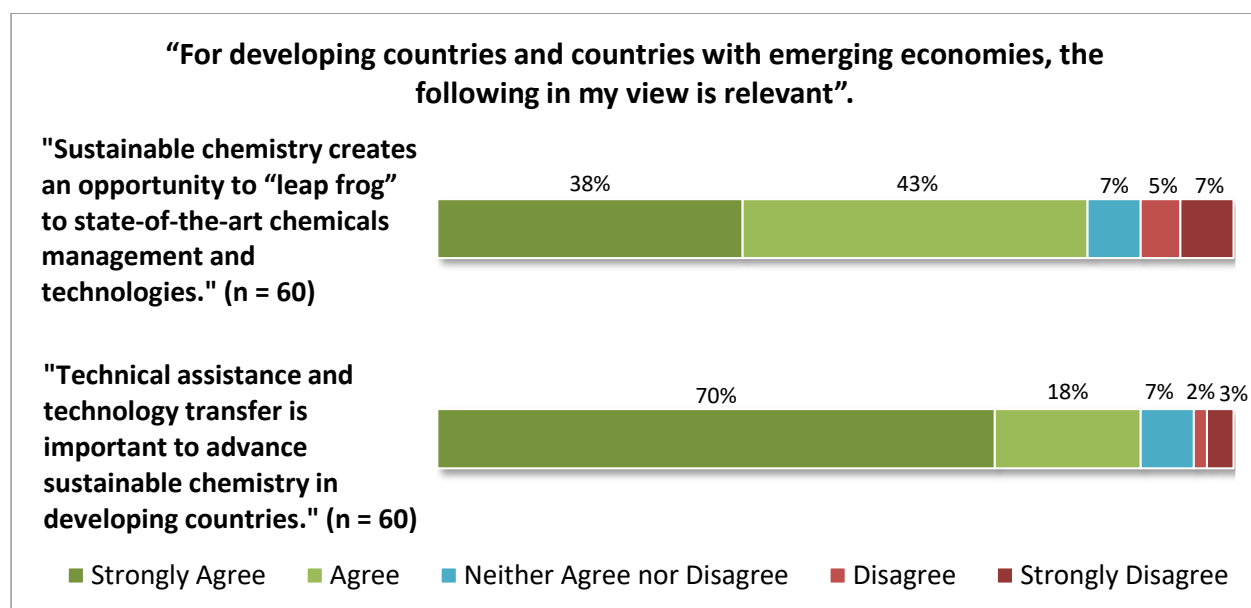


Figure 3.5: Sustainable chemistry in a developing country context (rounded percentages)

4. Summary Analysis

The preceding discussion suggests that sustainable chemistry is gaining momentum around the world and at the global level. However, since the concept is not a scientific term (unlike for example organic chemistry), its meaning is socially constructed, as also in the case of the concept of green chemistry. The exact nature of sustainable chemistry, what it entails and how it can contribute therefore needs further elaboration. In this context, the following considerations emerge from the analysis of stakeholder submissions in response to Resolution 2/7 adopted at the second session of the United Nations Environment Assembly and the UN Environment survey:

- Stakeholders see sustainable chemistry as playing a key role in achieving the SDG Target 12.4 on the sound management of chemicals and wastes, including implementation of the Strategic Approach to International Chemicals Management and the chemicals and waste multilateral environmental agreements, and other related aspects of SDG 12 on sustainable consumption and production. The submitted cases address all stages of the life cycle, including chemical and non-chemical alternatives; efficient and safe use and reduction of emissions and exposure; and waste management, recycling and remediation of pollution, thus highlighting potential synergies between chemicals and waste and resource efficiency.
- At the same time, the concept also helps to examine, and focus in more detail on the contribution of chemistry in achieving the broader 2030 Agenda SDG and Targets, such as zero hunger, climate action, safe housing, workers' health, innovation, and gender equality, while addressing all three dimensions of sustainable development.
- Stakeholder submissions and perspectives indicate that capacity-building and the establishment of an enabling environment are seen as important elements related to sustainable chemistry. Moreover, the concept is considered to hold potential for developing countries. Further work could explore how developing countries could be supported in potential future initiatives to advance sustainable chemistry, including through capacity-building, technology transfer and mobilisation of resources, thereby also relying on the use of existing tools.
- Given the interest of a large majority of stakeholders in the concept of sustainable chemistry, a practical starting point could be to develop a better understanding of sustainable chemistry opportunities globally, including possible development of a practical guidance on sustainable chemistry.
- A practical guidance could help to identify areas of action and innovations in chemistry that contribute to achieving the SDG without creating negative social, environmental, and health impacts. It could also help in a more systematic identification of best practices of sustainable chemistry in the future.
- Advancing the concept sustainable chemistry as a new type of chemistry is also an option, but this could be challenging, given the existence of the established green chemistry approach which is well-defined. Green chemistry could, however, become an important component of a broader approach to sustainable chemistry.
- Similarly, the perspective that sustainable chemistry is further developed internationally to serve as a destiny or end goal is an option. However, given the already widespread use of the sustainable chemistry term to characterise initiatives and action, further careful reflection would be needed how the option of sustainable chemistry being a destiny could be integrated into ongoing international discussions to develop a vision for chemicals and waste management beyond 2020.

Annex A: Overview of Responding Entities

#	Institution/organisation
Public Sector	
1	Agricultural Research Council, South Africa
2	Environment Ministry, Austria
3	Environment Protection Authority (EPA), Yemen
4	Federal Environment Agency, Germany
5	Tema Oil Refinery (TOR) Ltd.
6	The Permanent Mission of Mexico, Mexico
7	The Supreme Council for Environment, Bahrain
Intergovernmental organizations	
8	The Organisation for Economic Co-operation and Development (OECD)
9	The United Nations Industrial Development Organization (UNIDO)
Private sector	
10	American Chemistry Council (ACC)
11	Amoéba SA
12	BASF SE
13	European Automobile Manufacturers' Association (ACEA)
14	Foi Science (Pty) ltd
15	ICL Industrial Products Ltd
16	International Council of Chemical Associations (ICCA)
17	JACOR, LLC. EcoBioClean
18	Kama Industries Limited
19	MVO Nederland (CSR Netherlands)
20	Nordic Paper
21	Novartis
22	Pfizer Inc.
23	The Dow Chemical Company
Civil society	
24	Center for Public Health and Environmental Development (CEPHED), Nepal
25	Centre for Environment, Women, Education and Development (CEEWED), Nigeria
26	ChemSec, Sweden
27	International POPs Elimination Network (IPEN)
28	International Union of Pure and Applied Chemistry (IUPAC)
29	PAN Asia Pacific, Malaysia
30	PETA International Science Consortium
31	The Work Health and SurvivalProject, Greece
Academia	
32	Darmstadt University of Applied Sciences, Germany
33	Faculty of Technology and Metallurgy, Cleaner Production Centre of Serbia
34	Fundación Universidad de América, Colombia
35	Korea Research Institute of Chemical Technology, South Korea
36	Leuphana University, Germany
37	Stockholm University, Sweden
38	The Water Academy, France

Annex B: List of Cases and Entities Undertaking them

(number in brackets corresponds to list in Annex A; note: consistent and comprehensive information was not available on the status and timeline for implementation of a number of cases)

Public sector

5-point programme for sustainable plant protection (4)

Entity: German Environment Agency, International Chemicals Management, Germany

Summary: Provides principles for an integrated approach to sustainable plant protection.

Best practice code for the application of anticoagulant rodenticides (4)

Entity: The Federal Institute for Occupational Safety and Health (BAUA), Germany

Summary: A legally binding code regulating biocidal products containing anticoagulant rodenticides.

Biocides – Proposal for a concerted European approach towards a sustainable use (4)

Entity: German Environment Agency, International Chemicals Management, Germany

Summary: Proposes regulatory action to minimize the use and the effects of biocides.

Bioconversion of crude glycerol to ethylene (1)

Entity: Agricultural Research Council, Institute for Agricultural Engineering, South Africa

Summary: Introduction of a biological, renewable alternative to the thermochemical approach in ethylene production.

Chemical leasing (2)

Entity: Environment Ministry, DG Waste, Chemicals Green Tec, Austria

Summary: Use of chemical leasing business model to reduce use of chemicals/improve efficiency.

Chemicals Management in Bahrain (7)

Entity: Supreme Council for Environment, Chemicals management Unit, Bahrain

Summary: Establishment of a comprehensive regulatory system related to chemicals management.

Chemical Substitution – Corrosion Inhibitors (5)

Entity: Tema Oil Refinery (TOR) Ltd., Ghana.

Summary: Replacement of chemicals of concern used in treatment of cooling water and as oxygen scavenger in petroleum refining.

Climate Change Mitigation (5)

Entity: Tema Oil Refinery (TOR) Ltd., Ghana.

Summary: Replacement of a catalyst used in cracking in petroleum refining.

Desulfurization of Petroleum Products (5)

Entity: Tema Oil Refinery (TOR) Ltd., Ghana.

Summary: Improving existing process plants to remove sulfur in petroleum refining.

Funding sound management of chemicals and hazardous wastes in Yemen (3)

Entity: Environment Protection Authority (EPA), General Department of Chemical Safety & Hazardous wastes, Yemen

Summary: Strengthening of human resources for the sound management of chemicals and hazardous wastes.

Indicator set “Parameters of Sustainable Chemistry” (PSC) (4)

Entity: German Environment Agency, International Chemicals Management, Germany

Summary: An indicator to assess specific sustainability measures applied in enterprises, mainly focused on processes and production.

International Sustainable Chemistry Collaborative Centre (ISC3) (4)

Entity: International Sustainable Chemistry Collaborative Centre (ISC3), Germany

Summary: Establishment of a centre to establish sustainable chemistry worldwide as a key component of sustainable development, addressing among others the dissemination of business models, support for developing countries in the safe management of chemicals, guidance on regulation etc.

Joint Office for Chemical Permissions (7)

Entity: Supreme Council for Environment, Chemicals management Unit, Bahrain

Summary: Establishment of a new office to join all related government authorities to permit and release chemicals rapidly.

Letter by the Permanent Mission of Mexico (6)

Entity: The permanent mission of Mexico, Mexico

Summary: A note indicating that no best practices have yet been identified.

National Action Plan on Sustainable Use of Plant Protection products (4)

Entity: The Federal Ministry of Food and Agriculture (BMEL), Germany

Summary: Qualitative regulations, targets, measures, indicators and timetables to reduce risks from the use of approved plant protection products.

Resource Efficiency - Cleaner Production and Waste Management (5)

Entity: Tema Oil Refinery (TOR) Ltd., Ghana

Summary: Replacement of fuel oil in firing boilers and furnaces in oil refining.

Sub-select and guidance on sustainable chemicals (4)

Entity: German Environment Agency, International Chemicals Management, Germany

Summary: A tool to measure and compare the sustainability of substances and mixtures based on chemical properties.

The German Chemical Leasing Initiative (4)

Entity: German Environment Agency, International Chemicals Management, Germany

Summary: National chemical leasing project in multiple industry sectors to reduce the use of chemicals.

Intergovernmental organizations

UNIDO's Global Chemical Leasing Programme (9)

Entity: UNIDO and the Governments of Austria, Germany and Switzerland à multiple stakeholders

Summary: The programme promotes the chemical leasing concept as a service-oriented circular economy business model that can effectively address the different sustainability dimensions of chemical use.

OECD Web Portal on PFASs (8)

Entity: The Organisation for Economic Co-operation and Development (OECD), EHS Division, France

Summary: Information exchange platform on per and poly-fluorinated chemicals (including risk reduction approaches) and their alternatives.

Substitution and Alternatives Assessment Toolbox (8)

Entity: The Organisation for Economic Co-operation and Development (OECD), EHS Division, France

Summary: A toolbox that provides resources for chemical substitution and alternatives assessments.

Private sector

A biological alternative to chemical in the treatment of cooling liquid microbial (11)

Entity: Amoéba SA

Summary: Use of a biological biocide to treat water in cooling towers of industrial or institutional sites.

Audi-PtG-Anlage (4)

Entity: Audi AG

Summary: Carbon capture and utilization via methane synthesis for further development of the Power to Gas technology for the operation of motor vehicles.

BASF – Argan program in Morocco (4)

Entity: BASF

Summary: Delivery of biologically produced Argan oil and its bio-products under fair-trade conditions by a cooperative network employing a large number of women from rural areas.

BASF-Trilon-M (4)

Entity: BASF

Summary: Phosphates in dishwashing tabs replaced by Trilon-M formulations.

Biomass Balance approach – A ground-breaking way of using renewable resources in production (12)

Entity: BASF SE, Sustainability Strategy

Summary: Sale of certified biomass balance products which rely on the use of renewable resources to replace fossil fuels in integrated production systems.

BLUEDGE™ Polymeric Flame Retardant Technology (23)

Entity: The Dow Chemical Company, Dow Coating Materials

Summary: A flame retardant technology with low toxicity relative to hexabromocyclododecane.

CANVERA™ Polyolefin Dispersion for Can Coatings (23)

Entity: The Dow Chemical Company, Dow Coating Materials

Summary: A water and energy efficient alternative to bisphenol A, styrene or formaldehyde in food and beverage metal packaging.

Capacity Building to Foster the Sound Management of Chemicals (16)

Entity: The International Council of Chemical Associations (ICCA)

Summary: Voluntary industry initiative for capacity-building and product stewardship to implement environment, health and safety programs to manage chemical products throughout their lifecycle.

Chemistry for Green Building (10)

Entity: American Chemistry Council, Regulatory and Technical Affairs

Summary: Third-party auditing and supply chain guidance to certify the standards of buildings and building materials and products.

Covestro-Dream-Production (4)

Entity: Covestro

Summary: Carbon capture and utilisation via a catalyst that uses carbon dioxide instead of propylene oxide as a co-raw material in polyol synthesis.

Covestro-IMPACT-Technologie (4)

Entity: Covestro

Summary: Catalyst replacement of potassium hydroxide with double metal cyanide for higher quality and more sustainable polyether polyols.

Dow HYPOL Binder for Improving Technology in A Sustainable Manner (23)

Entity: The Dow Chemical Company, Polyurethanes

Summary: Replacement of TDI technology with MDI technology in the development of a grow tile with binding properties allowing the provision of green spaces in places where it is usually not possible.

EcoBioClean Solves a Global Problem (17)

Entity: JACOR, LLC. EcoBioClean

Summary: Reverse-engineering of crude oil into bio-available components via a biocatalyst, reducing need for potentially toxic chemical reaction solvents.

Global Regulatory Monitoring System of chemical Substances (GRMS2) (13)

Entity: European Automobile Manufacturers' Association (ACEA) Environment

Summary: Monitoring and development of a database covering developments in chemicals legislation worldwide.

Green and sustainable technologies to develop a greener and more energy efficient process to manufacture Pregabalin, active ingredient in the drug Lyrica® (22)

Entity: Pfizer Inc., Chemical R&D/Worldwide R&D

Summary: Replacement of organic solvents with a biocatalyst for increased energy efficiency and higher output.

Green Chemistry and Commerce Council (27)

Entity: Green Chemistry and Commerce Council (GC3)

Summary: A business to business group working to accelerate implementation of green chemistry.

Kilian – Functional substitution (4)

Entity: Kilian Industrieschilder

Summary: A regenerative substitution of toxic solvents with fatty acid esters from coconut oils in the production of industrial labels.

Nanomaterials and Sustainability (4)

Entity: Öko-Institut

Summary: A tool to evaluate the sustainability of nanotechnology applications.

Natural Greaseproof (20)

Entity: Nordic Paper

Summary: Replacement of PFAS in treated paper using mechanical treatment of wood fibres.

Prometho GmbH – GrüneTinte (4)

Entity: Prometho

Summary: Replacement of finite and hazardous raw materials for the manufacture of black ink with renewable and non-hazardous feedstocks obtained from biomass.

Removing organic solvents from our processes (21)

Entity: Novartis, Chemical Development

Summary: Surfactant-mediated chemistry as a higher output, less costly, less organic solvent-reliant alternative in pharmaceuticals production.

SAFR®: Integrating exposure with hazard in a new assessment approach for responsible flame retardant solutions (13)

Entity: ICL Industrial Products Ltd, Product stewardship

Summary: A tool to help flame retardant users to choose a suitable product relative to the level of hazard and exposure.

Small scale fisheries waste recycling project (15)

Entity: Foi Sciennce (Pty) ltd, Research

Summary: Collection of waste from fish processing companies for use in wound and burn relief products, food additive etc.

Süd-Chemie: Waste Water Treatment (4)

Entity: Süd-Chemie AG

Summary: Commissioning of a plant capable of separating heavy metal nitrates from the wastewater.

Sustainable Solution Steering® - Contributing to sustainability needs (12)

Entity: BASF SE, Sustainability Strategy

Summary: Use of an assessment method to analyse the sustainability of the entire product portfolio.

Sustainable Substitution Criteria (13)

Entity: European Automobile Manufacturers' Association (ACEA) Environment

Summary: Development of criteria for selecting safe non-regulated chemical alternatives to avoid regrettable substitutions.

Treatment of Effluent (18)

Entity: Kama Industries Limited

Summary: Environmentally sound waste management at a pharmaceutical manufacturing plant.

Usage of safer chemicals in the lab (18)

Entity: Kama Industries Limited

Summary: Replacement of chemicals of concern used in the production of pharmaceuticals.

Use of Green chemistry tools to influence route development for drug candidates (22)

Entity: Pfizer Inc., Chemical R&D/Worldwide R&D

Summary: Innovation and utilization of green chemistry tools such as solvent and reagent selection guides to improve the environmental performance in the synthesis of active pharmaceutical ingredients.

Waste Heat Recovery (4)

Entity: Deutsche Gasrußwerke (DGW)

Summary: Waste heat recovery, water recycling and the minimization of odour pollution in the furnace-black process.

Civil society

Banning of Import, Sale, Distribution and Uses of Asbestos in Nepal (24)

Entity: CEPHED, Environment and Public Health, Nepal

Summary: Awareness-raising campaign for a ban on the import, sale, distribution and use of asbestos.

Banning of Import, Purchase and Uses of all mercury based equipment's in health sector of Nepal (24)

Entity: CEPHED, Environment and Public Health, Nepal

Summary: Awareness-raising and capacity building efforts regarding the handling of mercury based equipment in the health sector.

Campaign for Standard of Children Toys (24)

Entity: CEPHED, Environment and Public Health, Nepal

Summary: Awareness-raising campaign for standards on chemicals of concern in children's toys.

Chemical Footprint Project (27)

Entity: Chemical Footprint Project (CFP), United States

Summary: A performance assessment of a company's management of chemicals, identifying opportunities for improvement.

ChemSec Marketplace (26)

Entity: ChemSec, Sweden

Summary: A platform for substitution of hazardous chemicals, featuring advertisements of safer alternatives from producers, as well as requests for safer alternatives from downstream users.

Elimination of POPs and its Sources in Nepal (24)

Entity: CEPHED, Environment and Public Health, Nepal

Summary: Capacity-building and training on best practices to avoid waste burning at healthcare facilities as well as open burning.

Global Perspective on Success Stories and Best Practices in Chemical Safety Protecting Occupational and Environmental Health (31)

Entity: The Work Health and Survival Project, Sustainability and Law, Greece

Summary: Advocacy piece on the protection of occupational health and safety.

GreenScreen (27)

Entity: Clean Production Action, United States

Summary: A tool implemented by major corporations to identify hazardous chemicals and alternatives. The tool can guide procurement, product design, standards and policies.

Promoting PCB Free Metal Fabrication through Technology Transfer (24)

Entity: CEPHED, Environment and Public Health, Nepal Replacing Chemicals With Biology:

Summary: PCB containing/contaminated oil based welding machines replaced by dry welding machines, to protect grill workers and reduce contamination, including of dioxins and furans.

Phasing out Highly Hazardous Pesticides with Agroecology (29)

Entity: PAN Asia Pacific, Pesticides, Malaysia

Summary: Provision of assistance and practical guidance for policy- and decision-makers as well as farmers to replace highly hazardous pesticides with ecosystem-based approaches in order to reduce human health and environmental impacts, while also addressing food security, poverty and climate change.

Research based campaign for Mandatory Lead Paint Standard in Nepal (24)

Entity: CEPHED, Environment and Public Health, Nepal

Summary: Awareness-raising campaign on lead content in paint as well as lead contamination in buildings to advocate for the establishment of mandatory lead paint standards.

Sustainable Chemistry Policy Action Plan (25)

Entity: Centre for Environment, Women, Education and Development (Ceewed), Management, Nigeria

Summary: Development of a multi-stakeholder strategy for sustainable chemicals management.

Use of non-animal methods to develop safer chemicals (30)

Entity: PETA International Science Consortium, United States

Summary: Use of robust non-animal testing methods to assess toxicity in the development of safer chemicals and products.

Academia

Chemical Leasing (33)

Entity: Faculty of Technology and Metallurgy, Cleaner Production Centre of Serbia

Summary: Glue is invoiced to the user by number of glued boxes, not per kilogram.

Chemical Leasing in automotive parts industry (33)

Entity: Faculty of Technology and Metallurgy, Cleaner Production Centre of Serbia

Summary: Application of the chemical leasing business model in cleaning operations to reduce the use of hazardous chemicals, thus also protecting workers.

Chemical Leasing in Hotels (33)

Entity: Faculty of Technology and Metallurgy, Cleaner Production Centre of Serbia

Summary: The cleaning agents (for cutlery, laundry and rooms) are invoiced per kilogram of washed laundry or per occupied room instead per kilograms of chemicals.

For an IPCPE (international panel on the chemical pollution of the environment) to create an international expert body to periodically assess the state of the chemical pollution of the environment on the model of the IPCC or the IPBES (38)

Entity: The Water Academy, Board, France

Summary: Establishment of an international expert body to assess chemical pollution.

Identification of Sustainable Alternatives to Replace the Use of Asbestos in the Automotive Sector (34)

Entity: Fundación Universidad de América, Research, Colombia

Summary: Development of a documentary to raise awareness about the negative effects of asbestos, including exposure of workers, and to advocate for the phase out of its use in the automotive sector as well as other products.

IUPAC submission (28)

Entity: International Union of Pure and Applied Chemistry (IUPAC), Interdivisional Committee on Green Chemistry for Sustainable Development (ICGCSD), United States

Summary: Note on the interface between sustainable chemistry and green chemistry.

Safe and sustainable nanotechnology practices (37)

Entity: Stockholm University, Department of Computer and Systems Sciences, Sweden

Summary: Note on the nanotechnology sector, including a discussion of potential health and environmental issues from the use of nanotechnology.

Series of Postgraduate Summer Schools on Green Chemistry (28)

Entity: International Union of Pure and Applied Chemistry (IUPAC), Interdivisional Committee on Green Chemistry for Sustainable Development (ICGCSD), United States

Summary: Following ten previous Summer Schools on Green Chemistry organised by the University of Venice, Interuniversity Consortium, Chemistry for the Environment, the new series of summer schools aims to teach students and researchers in chemistry how to apply principles of green chemistry to drive sustainable development.

Sustainable synthetic biology (37)

Entity: Stockholm University, Department of Computer and Systems Sciences, Sweden

Summary: Concept note advocating for the environmentally sound use of synthetic biology to avoid potential negative impacts while harnessing its potential.

Utilization of steel slag as a multi-purpose sorbent for pollutants (35)

Entity: Korea Research Institute of Chemical Technology, Center for Chemical Safety and Security, South Korea

Summary: Recycling of steel slag in environmental applications, such as acid-spill response, carbon dioxide sequestration, and sorbents for fluoride or heavy metals.

Wiki for chemical substance data to foster sound management of chemicals (32)

Entity: Darmstadt University of Applied Sciences, Society for Institutional Analysis (sofia), Germany

Summary: Adding of dashboards to the RWACH online registration dossiers featuring all available peer-reviewed studies on the respective substance.

Multi-stakeholder

3M – Recycling of PTFE (4)

Entity: 3M, Germany, the University of Bayreuth and the research institute InVerTec, Germany

Summary: Development of a pilot plant producing recycled high quality polytetrafluorethene from end of life material.

Chemical leasing – efficient and sustainable hospital hygiene (36)

Entity: Schülke & Mayr GmbH, OPAL Service GmbH, Klinikum Worms, Institut für Umweltmedizin und Krankenhaushygiene (IUK), Leuphana Universität Lüneburg and Deutsche Bundestiftung Umwelt (DBU)

Summary: The project focussed on a certain standard of hygiene needed in a medical environment instead of selling disinfectants only thus reducing disinfectant use on the one hand and creating revenue by service such as training.

Convening Diverse Stakeholders on Chemistry in Sustainable Development (16)

Entity: The International Council of Chemical Associations (ICCA), UN Environment; and the China Petroleum and Chemical Industry Federation

Summary: A multi-stakeholder workshop exploring the role of chemistry in achieving sustainable development.

New interesting tool: The Sustainability Hotspot Scan (19)

Entity: MVO Nederland (CSR Netherlands), International CSR Program; the research institute Netherlands Organization for Applied Scientific Research (TNO), Netherlands; Baril Coatings B.V., C. Kornuyt BV; and the Dutch Institute for Health and Environment (RIVM), Netherlands

Summary: Development of a tool allowing chemical companies to assess the social and environmental impact of chemical products during their life cycle.

PERO & SAFECEM – Cleaning of metal parts (4)

Entity: Safechem, Germany and Pero Innovative Services

Summary: Use of the chemical leasing business model to incentivise companies to consume fewer chemicals for the process of industrial parts cleaning for an automotive supplier.

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Third meeting

Montevideo, 2–4 April 2019

Item 4 of the provisional agenda*

**Progress towards the achievement of the 2020 overall objective
of the sound management of chemicals**

**Report of the Special Rapporteur on the implications for
human rights of the environmentally sound management
and disposal of hazardous substances and wastes**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Baskut Tuncak, submitted pursuant to Human Rights Council resolution 36/15. The report is presented in the annex as received from the Special Rapporteur and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes

Summary

In his first report to the General Assembly, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes introduces the mandate, highlights recent activities and offers recommendations for ongoing international discussions. The Special Rapporteur explains the link between the mandate and achieving the Sustainable Development Goals and brings to the fore the need for a stronger, more comprehensive global framework to protect human health from a toxic environment to help address the injustices resulting from divergent standards of protection between countries. The Special Rapporteur offers recommendations for the post-2020 framework for toxic chemicals and waste that in his view would strengthen the ability of the global community to protect human rights from toxic exposures and highlights the potential contribution of the business and human rights discourse to the issues at hand.

I. Introduction

1. The mandate on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes is in large part about the extent to which we have a right to control the entry of hazardous substances and wastes into our bodies. The vast majority of the global population lives on the wrong side of a toxic divide, exposed without their consent to hazardous substances and wastes that increase their likelihood of developing diseases and disabilities throughout their lives. For example, 91 per cent of the world's population lives in areas that exceed World Health Organization (WHO) guidelines for air pollution.¹

2. Pollution is estimated to be the largest source of premature death in the developing world,² approximately three times more than HIV/AIDS, tuberculosis and malaria combined. Air pollution kills about 7 million people annually, amounting to 1 in 9 deaths, with 4.2 million deaths from ambient outdoor air and 3.8 million from exposure to smoke from dirty cookstoves and fuel.³ Workers continue to be exploited by exposure to unsafe levels of toxic chemicals and other hazardous substances. Over 2 million workers die every year from occupational diseases, nearly 1 million from toxic exposures alone (see [A/HRC/39/48](#)). Many of the figures of death, disease and disability are believed to be an underestimation. The transfer of polluting industries, manufacturing activities and supply chains from wealthier countries to those with lower levels of protection contributes greatly to these adverse impacts on life and health.⁴

3. Improved technologies and methodologies have helped to visualize the pervasive nature of our invisible and incessant exposure to hazardous substances in the air we breathe, the water we drink, the food we eat, our homes and the places we work, as well as the countless products we consume. Through these advancements, our understanding of the adverse impacts of hazardous substances and wastes on our “right to ... adequate conditions of life”⁵ has expanded, and a misperception of so-called harmless exposures has been uncovered.

4. It is now well demonstrated that babies around the world are born “pre-polluted” ([A/HRC/33/41](#)). Over 200 hazardous substances have been detected in umbilical cords and the placenta, including toxic constituents of consumer products, food packaging and air pollution. Not only are children exposed during sensitive periods to a multitude of substances with known and unknown toxicity from a plethora of sources, but they are also exposed at higher levels than adults (*ibid*). Millions of children are deprived of their right to maximum development by exposure to hazardous substances before they can even begin to exercise their fundamental right to be heard.⁶

¹ See www.who.int/airpollution/en/.

² See the report of the Lancet Commission on pollution and health.

³ See www.who.int/airpollution/en/; see also [A/HRC/30/40](#).

⁴ See, for example, Haikun Wang and others, “Trade-driven relocation of air pollution and health impacts in China”, *Nature Communications*, vol. 8, article No. 738 (2017).

⁵ In 1972, the United Nations Conference on the Human Environment proclaimed the common conviction that people have the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being and that they bear a solemn responsibility to protect and improve the environment for present and future generations. (Declaration of the United Nations Conference on the Human Environment, [A/CONF.48/14/Rev.1](#), part one, chap. I).

⁶ Convention on the Rights of the Child, art. 12.

5. Over time, exposure levels of concern have been revised lower as investigators have used more sensitive measures and better study designs.⁷ For example, before the mid-1960s, a blood lead level above 60 micrograms per decilitre (µg/dL) was considered toxic. By 1978, the defined level of toxicity had declined 50 per cent to 30 µg/dL. Since then the “safe” level of exposure has progressively been revised lower. Today national bodies, such as the United States Centers for Disease Control and Prevention and WHO, consider there to be no safe level of childhood lead exposure, with exposure of 5 µg/dL associated with neurobehavioral damage.⁸ It was estimated in 2016 that lead exposure globally accounted for 540,000 deaths and 13.9 million years of healthy life lost.⁹

6. Through other advancements, we have a clearer picture of the intricate subtleties of how chronic exposure to a multitude of toxic substances during childhood and other sensitive periods of development can manifest over time into various adverse health outcomes, such as cancer, diabetes, birth defects, reduced intelligence and learning disabilities, asthma and other respiratory diseases. Experiments have demonstrated that exposures to combinations of substances at levels not predicted to have adverse effects can result in adverse effects. This has cast doubt on the conventional paradigm that seeks thresholds for no observed adverse effects as the basis for defining safety.

7. Seemingly every day we continue to uncover the myriad of ways we are subjected to a vast human experiment of incessant exposure to toxic substances, contrary to the clear right not to be subject to scientific experimentation without consent.¹⁰ Reports continue to illustrate trends of increasing incidences of health impacts arising from exposure to hazardous substances, but leave unanswered which exposure or exposures are responsible.¹¹ Illustrating the existential dimension of the problem is the decades of evidence of declining sperm counts observed in countries around the globe.¹²

8. Protection from exposure to hazardous substances is fundamentally about the rights to life, non-discrimination and bodily integrity, and is dependent on the realization of everyone’s right to information, meaningful participation and freedoms of association and assembly, as well as the right to an effective remedy, among others (see, for example, [A/HRC/36/41](#)).

9. The issue of exposure is also deeply interwoven with the discourse on our rights to health, safe food and water, adequate housing and safe and healthy working conditions, as well as a healthy environment, to name a few. However, in relation to these rights, it must be emphasized that the Committee on Economic, Social and Cultural Rights interprets the obligations and responsibilities of duty bearers as being

⁷ Lead is a poison that affects virtually every system in the body and is particularly harmful to the developing brain and nervous system of fetuses and young children (see Centers for Disease Control and Prevention, available at www.cdc.gov/nceh/lead/publications/books/plpyc/chapter2.htm).

⁸ WHO, *Childhood Lead Poisoning*, Geneva, 2010, available at www.who.int/ceh/publications/leadguidance.pdf.

⁹ WHO, “Lead poisoning and health”, fact sheet, 22 August 2018, available at www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health.

¹⁰ International Covenant on Civil and Political Rights, art. 7.

¹¹ See, for example, United States, Environmental Protection Agency, *America’s Children and the Environment*, 3rd ed. (Washington, D.C., January 2013).

¹² Hagai Levine and others, “Temporal trends in sperm count: a systematic review and meta-regression analysis”, *Human Reproduction Update*, vol. 23, No. 6 (November–December 2017). Available at <https://doi.org/10.1093/humupd/dmx022>.

to prevent and minimize exposure to hazardous substances and to respect the individual's right to bodily (physical) integrity.¹³

10. What we know today, including existing evidence of harm, knowledge of risks and the inherent uncertainties, requires a human rights-based approach that emphasizes the duty and responsibilities of States and businesses to prevent and minimize exposure. While science plays an essential role in advancing protection from exposure, a perverse version of a “science-based approach” has prevented progress in many cases regarding the prevention and minimization of exposure,¹⁴ contrary to human rights standards.

11. There are ample opportunities to reduce avoidable and unjustified exposures to hazardous and potentially hazardous substances. From both technological and policy perspectives, we have the tools to prevent and minimize exposure, often at levels below what is identified as a health risk ([A/HRC/36/41](#)). The particularly heinous nature of the exploitation of workers and communities through exposure is that there are almost always alternatives to prevent or minimize exposure. Solutions to this abuse of human rights are available, should States choose to compel businesses to adopt them.

12. To this end, efforts by States to move towards a “non-toxic environment” for present and future generations are commendable. Such initiatives are highly compatible with the State's duty to respect, protect and fulfil the many interrelated and interdependent human rights implicated by hazardous substances and wastes. For example, Sweden's national objective of a non-toxic environment, adopted by the Government with the participation of civil society and businesses, seeks to ensure that “total exposure to chemical substances via all sources of exposure is not harmful to people or biodiversity.”¹⁵ It also seeks to ensure that knowledge and information is available and accessible, consistent with the right to information.¹⁶ And, it seeks to ensure the remediation of contaminated sites, which is part of an effective remedy.¹⁷ A European Union-wide non-toxic environment strategy, due in 2018, presents a welcome opportunity to help close many protection gaps for children and other vulnerable groups.¹⁸

13. However, more is required, nationally, regionally and globally. The exposure of the most vulnerable in society to toxic exposure is a global problem, in which we are all to some degree complicit, whether as policymakers, employers or consumers.

II. Recent activities of the mandate

14. This is the first report of the mandate holder to the General Assembly since the establishment of the mandate in 1995 by the former Commission on Human Rights. Over the years, the mandate has evolved through successive resolutions of the Human Rights Council to examine the impacts of hazardous substances and wastes throughout their life cycles, from extraction to production, use, emission and final

¹³ Committee on Economic and Social Rights, general comments No. 14 and No. 18.

¹⁴ David Michaels, *Doubt is Their Product: How Industry's Assault on Science Threatens Your Health* (Oxford University Press, New York, 2008).

¹⁵ Swedish Environmental Protection Agency, “Specifications for a non-toxic environment”, available at www.swedishepa.se/Environmental-objectives-and-cooperation/Swedens-environmental-objectives/The-national-environmental-objectives/A-Non-Toxic-Environment/Specifications-for-A-Non-Toxic-Environment/.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ European Commission, 7th Environment Action Programme, “Study for the strategy for a non-toxic environment”, final report, p. 122. Available at <http://ec.europa.eu/environment/chemicals/non-toxic/pdf/NTE%20main%20report%20final.pdf>.

disposal. Under the mandate, issues of both occupational health and environmental health perspectives have been examined. The most recent reports of the current mandate holder to the Human Rights Council are summarized below.

A. Reports to the Human Rights Council

1. Workers' rights (2018)

15. Exploitation can take many forms. A particularly vicious form of exploitation is the exposure of workers to toxic substances.

16. In September 2018, the Special Rapporteur presented a report highlighting the global crisis confronting workers exposed to toxic chemicals (see [A/HRC/39/48](#) and [A/HRC/39/48/Corr.1](#)). He outlined key challenges and proposed 15 principles to help States, businesses and other key actors to protect workers from toxic occupational exposures and to provide remedies for violations of their rights. The report includes a detailed annex on various cases addressed by the mandate since 2007.

17. Global estimates from the International Labour Organization show that over 2,780,000 workers die from unsafe or unhealthy conditions of work each year. Despite clear human rights obligations relating to the protection of their health, workers around the world find themselves in the midst of a crisis — it is estimated that one worker dies at least every 30 seconds from exposure to toxic chemicals, pesticides, radiation and other hazardous substances. Yet incidences of exposure are grossly underreported in some contexts and countries.

18. Every worker has the right to dignity, ethical treatment and respect, as well as protection from conditions of work that are dehumanizing or degrading. The right to safe and healthy work is a right in itself; however, it also encompasses many other interrelated and interdependent human rights of workers, including the rights to life, health, bodily (physical) integrity and security of the person. They are indivisible from the rights to information, meaningful participation and freedoms of expression, assembly and association, as well as the right to an effective remedy.

2. Good practice guidelines (2017)

19. In September 2017, the Special Rapporteur delivered a long-standing request of the Human Rights Council: a report on guidelines to good practices (see [A/HRC/36/41](#)). These guidelines are intended to help States, businesses, civil society, trade unions and other key actors to identify and address fundamental problems that give rise to human rights abuses due to toxics.

20. The guidelines to good practices build on the Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework, recognizing that the challenges presented are most typically related to business conduct. Thus, the report is divided into three sections, namely the duties of States, the responsibilities of businesses, and access to justice and remedy, concluding with recommendations with respect to each.

3. Pesticides and the right to food (2017)

21. The mandate holder collaborated with the Special Rapporteur on the right to food to provide an account of global use of hazardous pesticides in agriculture and its impact on human rights (see [A/HRC/34/48](#)).

22. The report found that while scientific research confirms the adverse effects of pesticides, proving a definitive link between exposure and human diseases or conditions, or harm to the ecosystem, presents a considerable challenge. This

challenge has been exacerbated by a systematic denial, fuelled by the pesticide and agroindustry, of the magnitude of the damage inflicted by these chemicals, and aggressive, unethical marketing tactics that remain unaddressed.

23. The report notes with concern the problem of double standards of protection from pesticides between countries. Many low- and middle-income countries continue to use hazardous pesticides banned by high-income countries, which in some cases continue to export hazardous pesticides for the production of agricultural products that are then imported back. This transfer of polluting industries and hazardous work is exploitation. The volume of pesticide consumption in developing countries is large and has rapidly increased, with regular reports of serious impacts to the health of workers, local communities and ecosystems.

24. Without or with minimal use of toxic chemicals, it is possible to produce healthier, nutrient-rich food, with higher yields in the longer term, without polluting and exhausting environmental resources. The solution requires a holistic approach to the right to adequate food that includes phasing out dangerous pesticides and enforcing an effective regulatory framework grounded on a human rights approach, coupled with a transition towards sustainable agricultural practices that take into account the challenges of resource scarcity and climate change.

25. To this end, it is recommended in the report that States work towards a comprehensive, binding treaty to regulate hazardous pesticides throughout their life cycle, taking into account human rights principles. In the interim, it also recommends several good practices for States at the national level.

4. Rights of the child and childhood exposure (2016)

26. In 2016, the Special Rapporteur described the urgent need for States and businesses to meet their obligations and responsibilities under the Convention on the Rights of the Child regarding air, water and soil pollution, as well as the presence of toxic chemicals in food and consumer products (see [A/HRC/33/41](#)). States have a human rights obligation to first and foremost prevent childhood exposure to pollution and toxic substances, with mitigation measures only if prevention is not possible.

27. Children today are born “pre-polluted” with numerous contaminants that have an impact on their rights to survival and development, to be heard, to physical integrity and to health, among others. Representative studies have measured hundreds of toxic and otherwise hazardous chemicals in children in-utero and after birth through their mother’s exposure. Exposure to toxics and pollution continues incessantly after birth. While the studies primarily come from certain countries, every child in every country is a victim of this “toxic trespass” to varying degrees. Many of these exposures are transboundary in origin, including emissions into air and water and global production, consumption and disposal patterns, requiring global action.

28. Pediatricians refer to a “silent pandemic” of disability and disease associated with exposure to toxics and pollution during childhood, many of which do not manifest themselves for years or decades after exposure. Over one million child victims die prematurely before the age of 5 each year, with estimates of premature death from air pollution alone exceeding 500,000. However, this is only the tip of the iceberg, with countless millions affected by preventable diseases and disabilities such as cancer, diabetes, learning disabilities and birth defects later in life. These health impacts exert massive economic costs on governments and individuals, which questions the arguments against stronger protections simply because of the possible impacts on economic growth.

5. Right to information (2015)

29. In September 2015, the current Special Rapporteur presented his first full thematic report to the Human Rights Council on the right to information in the context of hazardous substances and wastes ([A/HRC/30/40](#)). Information is an enabler of many human rights that are affected by hazardous substances and wastes. Information is crucial to preventing human rights violations and abuses resulting from exposure to hazardous substances and wastes and realizing the right of victims of exposure to an effective remedy. However, vital information on hazardous substances and wastes is frequently unavailable and inaccessible, including information about their hazardous properties, exposure levels and incidences of diseases and other adverse health impacts.

30. The enjoyment of the right to information is critical in the context of toxics, in order to prevent adverse impacts, to ensure the realization of the right to freedom of expression and to enable individuals and communities to participate in decision-making processes and to seek and obtain remedy. Health and safety information about toxic chemicals must never be confidential. Information must be available, accessible, functional and consistent with the principle of non-discrimination in order for human rights to be respected, protected, enjoyed and fulfilled. Despite notable improvements in many countries over recent decades, the right to information remains insufficiently realized in the area of hazardous substances and wastes, particularly with respect to protecting the most vulnerable from the adverse impacts of exposure, whether from consumer products, at the workplace or via food, water, air or other sources.

31. The report clarifies the duties and responsibilities of States and businesses regarding the right to information in order to protect human rights affected by toxics. States are duty-bound to generate, collect, assess and update information; effectively communicate such information, particularly to those disproportionately at risk of adverse impacts; ensure confidentiality claims are legitimate; and engage in international cooperation to ensure that foreign Governments have the information necessary to protect the rights of people in their territory. In discharging their duty to conduct human rights due diligence, businesses are responsible for identifying and assessing the actual and potential impacts of hazardous substances and wastes, either through their own activities or as a result of their business relationships, and to communicate information to other businesses, governments and the public effectively.

B. Illustrative cases

32. Through communications to States and businesses, as well as country visits, the mandate holder has worked on various cases illustrating the impacts of toxics and pollution throughout the life cycle of consumption and production. These impacts are visible across various economic sectors and industrial activities. They illustrate violations and/or abuse of various human rights, particularly of the most vulnerable in society, including the rights of the child, older persons, workers, indigenous peoples, the poor and migrant and minority communities. The categories are hard to define, as the issues and sectors are often interlinked.

1. Air pollution

33. Air pollution is a major source of exposure to hazardous substances and wastes. In 2017, the Special Rapporteur issued a statement calling for strong, urgent action by States, including legislation and enforcement of corporate accountability, to ensure that people around the world can enjoy the human rights to life and health in environments free from contamination.¹⁹ The call was instigated by the findings of

¹⁹ The statement was subsequently endorsed by several other special rapporteurs and independent experts of the Human Rights Council. See www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?LangID=E&NewsID=21222.

the Special Rapporteur during several country visits, estimates by WHO of 7 million premature deaths due to air pollution and previous investigations into the realization of the rights of the child.

34. During his visit to the Republic of Korea, the Special Rapporteur highlighted the case of humidifier sterilizers marketed and sold without adequate investigation of their risks to human health and life (see [A/HRC/33/41/Add.1](#)). Unknowingly, consumers added the toxic product to water tanks of humidifiers, hugely popular in the Republic of Korea, resulting in toxic indoor air. The chemical mixture was marketed on the premise that it would promote health and well-being.

35. The actual number of victims is unknown and is still being evaluated. By December 2015, the Government had recognized that 95 people had died and 221 had suffered adverse health impacts after inhaling hazardous chemicals, mostly young children, pregnant women and the elderly. According to the Korea Environmental Industry and Technology Institute, a total of 6,179 individuals had been registered as victims by 26 October 2018. The number includes 1,357 cases of deceased individuals.²⁰ The largest seller of the humidifier sterilizers was the subsidiary in the Republic of Korea of a pharmaceutical company from the United Kingdom of Great Britain and Northern Ireland that certainly should have known the risks of inhaling chemical substances without evidence regarding their effects on health or their safety, regardless of the fact that it was in compliance with certain laws at the time. While a few companies have apologized, the mandate holder remains concerned regarding the inadequate accountability of the chemical companies that sold the chemical ingredients to companies marketing the humidifier sterilizers.

36. During various country visits, the issue of outdoor air pollution and its adverse health impacts, particularly for women of reproductive age, children and older persons, has been of grave concern. During a visit in 2017, the Special Rapporteur observed how air pollution continues to plague the United Kingdom (see [A/HRC/36/41/Add.2](#)). Over 40,000 premature deaths per year were estimated to occur in the country, with over 9,000 in London alone.

37. Recently, a mother delivered a petition with 100,000 signatures calling for a new inquest into her daughter's death, which she believes to be due to her daughter's exposure to air pollution. Ella died in February 2013 after suffering from extreme asthma and seizures for three years. During that time, local air pollution levels breached European Union legal limits. Permissible exposure limits in member States of the European Union for various air pollutants currently exceed levels recommended by WHO. The case is important in many respects, including the challenge faced by victims of air pollution to establish a sufficient causal linkage between health impacts and air pollution exposure to access an effective remedy.

2. Contaminated land

38. The situation faced by Roma, Ashkalija and Egyptian families displaced during the Kosovo conflict and housed by the United Nations in camps constructed on lead-contaminated toxic wasteland between 1999 and 2013, is of concern to the Special Rapporteur. The affected communities, including children, continue to suffer from long-term, serious damage to their health as a result of poisoning. They continue to live in conditions of economic hardship and social deprivation, hampering their access to adequate medical services. The Special Rapporteur addressed an open letter to the Secretary-General concerning his 2017 decision to establish a trust fund charged with implementing community-based assistance projects, which would benefit the affected communities, inquiring about the progress and functioning of the

²⁰ See www.healthrelief.or.kr/home/content/stats01/view.do.

trust fund.²¹ Despite expressions of political support by Member States, no financial contribution has yet been received by the international community. The Special Rapporteur calls on the United Nations and its Member States to mobilize the necessary resources without further delay.

3. Water pollution and contamination

39. In 2016, the mandate holder sent a joint communication²² to the Government of the United States of America and issued a public statement²³ with several other mandates holders regarding the situation of children suffering from lead contamination in Flint, Michigan, and elsewhere in the country. The case raised grave concerns regarding the injustice of pollution and contamination borne by poor and minority communities across the United States.

40. The Special Rapporteur issued numerous communications and statements regarding water pollution from the Formosa Ha Tinh Steel Corporation plant in April 2016 in Viet Nam. The resulting pollution discharge killed large volumes of fish on which local communities depended, both for sustenance and their livelihoods. Of grave concern is the harassment, detention and imprisonment of dozens of local journalists, bloggers and human rights defenders for expressing concern regarding the impacts of pollution and unhealthy working conditions, as well as the need for effective remedies. The Special Rapporteur together with other mandate holders addressed letters to the Government of Viet Nam, including regarding the conviction and sentencing of two human rights defenders, in what appeared to be retaliation for legitimate human rights work related to pollution caused by the toxic waste discharge.²⁴

4. Agricultural production

41. The Special Rapporteur has been concerned about the impacts of pesticides and other hazardous substances used in and produced for agriculture, which raises concerns of exposure resulting from air pollution and water contamination, as well as direct exposures, particularly of workers.

42. Exposure of children using or otherwise exposed to pesticides and other toxic substances at work is one of the worst aspects of child labour. This is a major concern that is repeatedly brought to the attention of the mandate holder from cases around the world. A related concern is the exposure of women of reproductive age to pesticides and other toxic chemicals at work, potentially during the early stages of pregnancy, sometimes before they even know they are pregnant, subjecting their children to the risk of various adverse health impacts. In a recent communication regarding tobacco production in Zimbabwe,²⁵ at least 10 foreign companies were identified as sourcing tobacco from farms where children are reportedly using or

²¹ See www.ohchr.org/Documents/Issues/ToxicWastes/LetterSGAshkaliEgyptianCommunities.pdf.

²² See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=18467>. For replies from the State, see <https://spcommreports.ohchr.org/TMResultsBase/DownloadFile?gId=32453> and <https://spcommreports.ohchr.org/TMResultsBase/DownloadFile?gId=33284>.

²³ See www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=17139&LangID=E.

²⁴ See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=23672>. For the reply from the State, see <https://spcommreports.ohchr.org/TMResultsBase/DownloadFile?gId=34029>.

²⁵ See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=23765>.

mixing pesticides.²⁶ These tobacco companies are based in China, Germany, Japan, Switzerland, the United Arab Emirates, the United Kingdom and the United States.²⁷

43. During a recent visit to Sierra Leone (see [A/HRC/39/48/Add.1](#)), the Special Rapporteur observed that environmental impact assessments of a large-scale palm oil plantation, owned and operated by a Europe-based corporation, were devoid of meaningful information about pesticides use and their volumes from which to determine potential environmental and occupational risks. The Special Rapporteur was informed that the pesticides used included those disallowed from use in Europe and elsewhere, and is concerned by the limited capacity of the Government to monitor potential impacts of their use on health and water resources.

5. Extractive industries

44. The mandate holder continues to address numerous cases of alleged human rights violations and abuses as a result of the activities of extractive industries. In most cases, there are strong transnational links, whether related to foreign-owned operators or to resources that are processed and used in global supply chains.

45. These cases illustrate inadequate conduct of human rights due diligence for hazardous substances and wastes. In the case of the Mariana (also referred to as Samarco or Rio Doce) disaster, concerns were raised regarding the insufficiency of efforts to prevent what some have described as Brazil's worst environmental disaster. The flood of waste following the rupture of the dam killed at least 18 people and affected the lives of millions of people living along the 800 km Rio Doce watershed.²⁸ The mandate holder was particularly concerned with the lack of transparency by authorities and companies in disclosing crucial information regarding the danger posed by the dam to local communities and the unjustified subsequent statements that the waste spilled did not pose a health risk. Concerns continue to be raised regarding substantive and procedural aspects of the settlement and remedy process, including insufficient participation by affected communities and the inadequate progress made.²⁹

46. In 2016, the mandate holder undertook an unofficial visit to Peru to assess the situation of the indigenous peoples in the Amazon who continue to grapple with decades of toxic waste left by oil companies in their territories, which has been the subject of various communications by the mandate holder. The Special Rapporteur remains concerned that the Argentina-based company Pluspetrol has not fulfilled its obligation to remediate both its own oil contamination and the contamination left by its predecessor in Lot 192 (formerly Lot 1 A/B) decades ago. New agreements were reached for continued extraction without the completion of remediation and pipelines for oil transportation are in desperate need of replacement, with over 50 alleged incidences of rupture and further contamination in the past three years alone.

6. Chemical industries

47. Various manufacturers of industrial chemicals, pesticides, pharmaceuticals and other chemical products have been linked with human rights abuses resulting from the toxicity of their products, from unsafe conditions at facilities to widespread human

²⁶ See the Office of the United Nations High Commissioner for Human Rights (OHCHR) communications database at <https://spcommreports.ohchr.org/Tmsearch/TMDocuments>.

²⁷ See OHCHR communications database at <https://spcommreports.ohchr.org/Tmsearch/TMDocuments>.

²⁸ See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=14484>.

²⁹ See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=321>. For the reply from the State, see <https://spcommreports.ohchr.org/TMResultsBase/DownloadFile?gId=2093>.

contamination resulting from pollution, contamination and waste produced by their products. Over several decades, the global chemical industry has grown at astronomical rates, particularly in low- and middle-income countries.³⁰ The protection gaps and resultant impacts are apparent.

48. In 2015, a series of explosions in China killed at least 173 people, and resulted in over 700 non-fatal injuries. Large quantities of industrial chemicals were stored near residential areas without the knowledge of residents and regulators, and first responders entered the building without information about the type and amounts of chemicals stored. The Special Rapporteur called for tighter regulation and enforcement, highlighting the need for further realization of the right to information regarding hazardous substances.³¹

49. Many of the cases illustrate the challenge of securing an effective remedy, even in the clearest of correlations between business activities and impacts. In 1984, a toxic chemical leak killed over 6,000 people living near a toxic pesticide production facility in the town of Bhopal, India. Nearly 35 years after the disaster, the mandate holder continues to receive information on ongoing contamination of water and other resources. The inability of the community to gain access to an effective remedy and the impunity of various companies implicated in the disaster, including those that acquired the facility but deny any responsibility for the clean-up, is a seminal example of the exploitation of lower standards of protection in developing countries and the inordinate challenge facing victims to access an effective remedy.

50. The Special Rapporteur welcomed an announcement in 2014 by the Government of India that it would reconsider the official figures of people affected by the Bhopal disaster and provide additional compensation. However, financial compensation alone is not an effective remedy and will not stop the ongoing human rights violations resulting from Bhopal's toxic legacy. Information is provided regularly to the mandate holder of new victims of the Bhopal disaster who are born every day and suffer all their lives from adverse health impacts. The Special Rapporteur has called on all parties to ensure an effective remedy for the victims.³²

7. Manufacturing and consumer products

51. Concerns have also been raised regarding exposure to toxic chemicals in the context of the manufacture, use and disposal of common consumer products, such as electronics, clothing, cosmetics, cleaning products and detergents.

52. For example, after an 11-year campaign for justice and accountability by victims, their representatives and other human rights defenders, Samsung Electronics recently agreed to arbitration over the case of 150–250 deceased and sickened workers who allege their health has been affected by exposure to toxic substances in the manufacture of certain electronic products in the Republic of Korea.³³ Although a positive step, this is only one company in one industry in one country.

8. Nuclear radiation

53. A topic of concern under the mandate has been nuclear waste from military activities and energy production. The former Special Rapporteur undertook a mission

³⁰ United Nations Environment Programme, *Global Chemicals Outlook: Towards Sound Management of Chemicals* (Nairobi, 2013).

³¹ See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=15347> and www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=16332.

³² See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=19622> and www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=15335&LangID=E.

³³ See <https://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=23476&LangID=E>; see also [A/HRC/33/41/Add.1](https://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=23476&LangID=E).

to the Marshall Islands to examine contamination resulting from years of nuclear weapon testing (see [A/HRC/21/48/Add.1](#)). The current mandate holder has also addressed the issue during a recent country visit to Kazakhstan, where approximately 400 nuclear bombs were detonated during tests by the former Soviet Union (see [A/HRC/30/40/Add.1](#) and [A/HRC/30/40/Add.1/Corr.1](#)).

54. Seven years after the nuclear disaster in Fukushima, Japan, actions for the reconstruction and revitalization of Fukushima are in full implementation process, with evacuation orders lifted for most of the areas. In March 2017, housing subsidies reportedly stopped to be provided to self-evacuees, who fled from areas other than the government-designated evacuation zones.

55. Following the nuclear disaster, Japan raised the acceptable level of radiation for residents in Fukushima from 1 millisievert a year (mSv/year) to 20 mSv/year. The universal periodic review mechanism of the Human Rights Council recommended that the Government of Japan return acceptable levels of exposure to those in place before the Fukushima disaster. The Special Rapporteur has raised concerns with the Government on both the situation confronting residents, including children and women of reproductive age, who may return to areas with levels of radiation above 1 mSv/year, as well as concerns regarding the exposure of workers involved in the remediation of the prefecture.³⁴ The death of a remediation worker from lung cancer was recently recognized as resulting from exposure to radiation.

9. Waste

56. The issue of waste disposal, particularly the export of waste from wealthy countries to poorer countries, is a core element of the mandate. Perhaps no case illustrates the incredible audacity of certain businesses to exploit vulnerable communities quite like the case of the vessel *Probo Koala*. The owners of the ship, essentially a manufacturing facility, contracted a company of no repute to dispose of its toxic waste because they could not find a suitable price in Europe. The waste was disposed of in and around the city of Abidjan, Côte d'Ivoire, during the night, killing nearly 20 people and leaving tens of thousands seeking medical help for their exposure (see [A/HRC/12/26/Add.2](#)).

57. The situation surrounding the export of end-of-life ships for recycling and disposal (shipbreaking) has been examined under the mandate for many years in previous reports and country visits (see [A/HRC/12/26](#)). For example, the European Union does not permit titanic, toxic ships to be dismantled directly on their beaches by poorly equipped workers; but legal loopholes in the European Union regulation on ship recycling enable this double standard to be perpetuated in some of the world's poorest communities.

58. During a recent country visit to Denmark (see [A/HRC/39/48/Add.2](#), forthcoming), the mandate holder was alerted to cases involving the Danish shipping company Maersk, which in the view of the Special Rapporteur was at one point among the leaders in responsible ship recycling. Several years ago the company had a policy prohibiting shipbreaking on beaches in Asia under abhorrent conditions, which it recently and unfortunately reversed for seemingly unjustified reasons. In a specific case, a United Kingdom-registered radioactive ship, the *North Sea Producer*, co-owned with the Brazilian company Odebrecht, arrived in Bangladesh via the United Kingdom

³⁴ See <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=23025> and <https://spcommreports.ohchr.org/TMResultsBase/DownloadPublicCommunicationFile?gId=23923>. For replies from the State, see <https://spcommreports.ohchr.org/TMResultsBase/DownloadFile?gId=33521> and <https://spcommreports.ohchr.org/TMResultsBase/DownloadFile?gId=34302>.

for dismantling on beaches by poorly trained, equipped and monitored workers, posing a serious risk to the rights of local communities and workers.³⁵

59. The issue of urban landfills and the threats posed to life and health continues to also be raised with the mandate holder. During his mission to Sierra Leone, the Special Rapporteur was alarmed by the presence of a large landfill in the heart of Freetown, the most populated city of the country. He witnessed women and children, living inside the dump, eating meat from animals fed with potentially toxic waste; and the informal operations of waste pickers risking health and life to scale walls of waste to scavenge scraps for recycling and recovery. He encouraged the international community to support Sierra Leone to address the problems created by unsustainable global consumption and production patterns.³⁶

III. Implementing the Sustainable Development Goals and protecting human rights from toxic exposures

60. Among the Sustainable Development Goals, the issue of exposure to hazardous substances and wastes is present throughout the text, although not as prominently as one would expect given the magnitude of the issue. Hazardous substances and wastes are connected to all 17 of the Goals. For example, people in poverty (Goal 1) often bear the brunt of toxic pollution, and reductions in exposure are required to achieve health targets (Goal 3). Responsible consumption and production depend on reducing the release of chemicals and wastes into air, water and soil with an aim of minimizing their adverse impacts on human health and the environment (Goal 12) and safe work requires the protection of workers from occupational exposures (Goal 8). Goal 2 includes ensuring access to safe food and Goal 6 includes improving water quality by minimizing the release of hazardous chemicals and materials.

61. To achieve the Sustainable Development Goals, in particular to lower the burden of non-communicable diseases, States and businesses must prevent and minimize human exposure to hazardous substances. But beyond the Goals, protection against exposure is incumbent on all States under international human rights law. As described below, two opportunities exist for States to help ensure collective action.

A. Post-2020 framework for toxic chemicals and waste

62. As the rates of disease, disability and death attest, protection of human health from exposure to hazardous substances is a global challenge in urgent need of global action. Central to this is the global control of toxic chemicals and pesticides throughout their life cycle to protect human rights and ensure sustainability.

63. Efforts over the past several years have been largely confined to a set of narrow treaties for specific substances and stages of industrial activity. Over the years, global treaties for “chemicals and wastes” have evolved into the primary global instruments on environmental health in relation to pollution, toxic chemicals and wastes. There is ample room for their continued implementation.

64. However, even if fully implemented, the scope of existing global agreements on toxic substances is grossly inadequate to protect human health from the vast majority of hazardous substances of global concern. Less than 0.1 per cent of industrial and agricultural chemicals with known intrinsic health hazards are regulated through their

³⁵ See OHCHR communications database at <https://spcommreports.ohchr.org/Tmsearch/TMDocuments>.

³⁶ See www.ohchr.org/EN/Issues/Environment/ToxicWastes/Pages/Visits.aspx.

life cycle under these existing instruments.³⁷ Even if the existing conventions were fully implemented, thousands of chemicals of global concern would not fall within their scope.

65. At the World Summit on Sustainable Development in 2002, States recognized the need for a framework at the global level to achieve the sound management of chemicals. The Strategic Approach to International Chemicals Management was established in 2006, intended to fill the protection gap left by the current patchwork of global treaties for chemicals and wastes, which omit thousands of hazardous substances. While some progress was made under the Strategic Approach, there appears unanimous agreement that we are a long way from achieving even the least ambitious definition of sound chemicals management.

66. There is an urgent need for a stronger, more comprehensive global framework to protect human health from a toxic environment to help address the injustices resulting from divergent standards of protection between countries. Solutions exist to eliminate and reduce exposure to toxic substances, but international cooperation and strong global standards are required to ensure that these existing opportunities ensure sustainable development and protect human rights.

67. The mandate of the Strategic Approach is set to expire in 2020. This presents an opportunity to craft a meaningful agreement on environmental health, protecting people from exposure to toxic substances found in contaminated water, food and air, as well as consumer products, such as furniture, cosmetics, building materials and toys. This opportunity is essential to the realization of numerous internationally recognized human rights.

68. The Special Rapporteur offers recommendations for the post-2020 framework (future framework) on toxic chemicals and waste that in his view would strengthen the ability of the global community to protect human rights from the effects of toxic exposures.

1. A requirement that States have effective national systems

69. Under the 2006 Dubai Declaration on International Chemicals Management, which forms part of the Strategic Approach, States, businesses and civil society all explicitly recognized that exposure to toxic chemicals and hazardous wastes is a human rights issue. They committed themselves to “respecting human rights and fundamental freedoms, understanding and respecting ecosystem integrity and addressing the gap between the current reality and our ambition to elevate global efforts to achieve the sound management of chemicals.”

70. This important statement captures only one aspect of the State’s duty under human rights law, namely the duty to respect human rights. However, the duty of States is not only to refrain from interfering with or curtailing the enjoyment of the multitude of human rights that may be affected by toxic chemicals and wastes, but also to actively protect those rights against violation or abuse by third parties, including businesses. This duty to protect human rights is clearly reflected in the Guiding Principles on Business and Human Rights, which were endorsed by the Human Rights Council in 2011.

71. Every State has an existing obligation under international law to have effective systems in place to protect people against toxic exposures. By virtue of their commitments under international treaties to protect the rights to life, health, safe

³⁷ This represents a very conservative estimate based on existing classifications. Thousands of industrial chemicals have not been thoroughly assessed and classified for the health hazards they may present.

water and food, adequate housing and safe and healthy working conditions, among others, every State has an obligation to have systems that prevent and minimize exposure to toxic substances.

72. For example, over 190 States recognize the right to health in one or more human rights treaties.³⁸ Under this right, States have an obligation to take steps towards “the prevention and reduction of the population’s exposure to harmful substances such as radiation and harmful chemicals ... that directly or indirectly impact upon human health.”³⁹ Furthermore, States are required to adopt positive measures to protect the right to life,⁴⁰ including effective measures to prevent and safeguard against hazards that threaten the lives of human beings (see [E/CN.4/Sub.2/1994/9](#) and [E/CN.4/Sub.2/1994/9/Corr.1](#), para. 175). States must take all possible measures to reduce infant mortality and to increase life expectancy, especially in adopting measures to eliminate malnutrition and epidemics.⁴¹ The Convention on the Rights of the Child contains an explicit obligation on States to protect children’s health from pollution and contamination.

73. Under the Strategic Approach, States, businesses, international organizations and civil society participants agreed upon a set of 11 basic elements of a national system for sound chemicals management to prevent and reduce exposure to toxic substances. These basic elements, including legislation, regulation and enforcement, are necessary to respect, protect and fulfil the rights to life and health, among others.

74. However, the policy framework of the Strategic Approach does not contain any obligation on States to have such systems in place, and many States still lack effective systems to protect life and health from toxic exposures. Such a national system is neither optional nor a luxury, but rather a necessary and fundamental duty of the State. The future framework for chemicals and wastes should contain a clear obligation on States to have effective systems in place to protect against toxic exposures.

2. A periodic review mechanism

75. Good governance is essential for environmental health at any level, and essential elements of good governance are the principles of transparency and accountability.⁴²

76. The Strategic Approach is rightly criticized for its unsatisfactory reporting and review mechanism of national efforts on sound chemicals management,⁴³ as “no institution is responsible for exercising strategic oversight and monitoring with respect to chemicals and waste management.”⁴⁴ Statistics on reporting reveal limited reporting rates of States.⁴⁵ These weak reporting and review mechanisms prevent supervisory or oversight roles within the existing structure of the Strategic Approach

³⁸ International Covenant on Economic, Social and Cultural Rights, Convention on the Rights of the Child and the Constitution of WHO.

³⁹ Committee on Economic, Social and Cultural Rights, general comment No. 14 (2000).

⁴⁰ Human Rights Committee, general comment No. 6 (1982) on the right to life, para. 5.

⁴¹ See Human Rights Committee, general comment No. 6 (1982), para. 5. While the Committee states that it would be “desirable” for States to take all possible measures, the evidence is now much stronger that States must take all possible measures to respect, protect and fulfil

⁴² Tuula Honkoken and Sabaa A. Khan, *Chemicals and Waste Governance Beyond 2020: Exploring Pathways for a Coherent Global Regime* (Nordic Council of Ministers, Copenhagen, 2017), p. 32.

⁴³ *Ibid.*, pp. 56 and 58.

⁴⁴ *Ibid.*, p. 75.

⁴⁵ International expert and stakeholders workshop on integrated national implementation of the Sustainable Development Goals and international chemicals and waste agreements, presentation by Tatiana Terekhova, Carolyn Vickers and Brenda Koekkoek on indicators of progress and monitoring, Geneva, 11–13 April 2016.

in achieving the 2020 goal.⁴⁶ In part for the lack of accountability, States have been reluctant to commit substantial resources to the Strategic Approach since its inception in 2006.

77. Although sound chemicals management is a target under the Sustainable Development Goals, the review process of the Goals does not address the problem of insufficient oversight and monitoring for the Strategic Approach if it continues beyond 2020, or for any future framework for chemicals and wastes. There are concerns that the architecture for the follow-up and review of the Goals is based on voluntary national reviews and peer-reviewed soft guidance.⁴⁷ The process also has inadequate representation and participation of civil society, as government-appointed representatives primarily undertake reviews.⁴⁸ Furthermore, States do not benefit from country-specific recommendations, which could provide tailor-made suggestions on Sustainable Development Goal implementation and measures to improve chemicals management in light of national circumstances.⁴⁹

78. Further reinforcing the need for periodic reporting and review mechanisms is that international treaties to protect against exposure to hazardous substances and wastes lack effective reporting, compliance and review mechanisms. Many countries continue to fail to meet their reporting commitments.⁵⁰ It was noted recently that up to 60 per cent of States do not meet reporting requirements under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Stockholm Convention on Persistent Organic Pollutants.⁵¹ Neither the Stockholm Convention nor the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade has a compliance mechanism, and the Basel Convention requirements are considered weak.

79. A periodic assessment of efforts by States and non-State actors on chemicals management under a future framework for chemicals and wastes would help to ensure progress towards the sound management of chemicals, and thus to the realization of human rights and to the achievement of the Sustainable Development Goals.⁵² The existence of such an accountability mechanism under the future framework may help to mobilize resources from donors. However, an accountability mechanism necessitates the existence of clear obligations on States in the future framework on chemicals and wastes, such as obligations to have effective national systems in place, to submit national action plans and to provide periodic updates to review of national progress towards the sound management of chemicals.

80. In this regard, the Special Rapporteur believes a system similar to the universal periodic review of the Human Rights Council would be of great value to the future

⁴⁶ Center for Governance and Sustainability, University of Massachusetts Boston, “Options for effective governance of the beyond-2020 framework for sound management of chemicals and waste: lessons from other regimes”, Strategic Approach to International Chemicals Management, second meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste beyond 2020, document SAICM/IP.2/INF.14, annex, p. 6, available at www.saicm.org/Portals/12/documents/meetings/IP2/IP_2_INF_14_Governance_CGS_f.pdf. See also Geneva Academy of International Law and Human Rights, research brief, May 2018, available at www.geneva-academy.ch/joomlatools-files/docman-files/Research%20Brief%20Economic,%20Social%20and%20Cultural%20Rights%20and%20SDGs.pdf.

⁴⁷ Ibid.

⁴⁸ Center for Governance and Sustainability, SAICM/IP.2/INF.14, annex.

⁴⁹ Geneva Academy, research brief, p. 3.

⁵⁰ United Nations, *Sustainable Development Goals Report 2017* (New York, 2017).

⁵¹ ChemicalWatch, “International treaties: monitoring compliance” (June 2015), available at <https://chemicalwatch.com/24151/international-treaties-monitoring-compliance>.

⁵² Honkonen and Khan, *Chemicals and Waste Governance Beyond 2020*, p. 32.

framework for chemicals and waste.⁵³ The universal periodic review is a unique, comprehensive and universal reporting and review process that involves an objective and non-confrontational review of all Member States' performance under several different human rights treaties, with an inclusive multi-stakeholder participatory approach.⁵⁴ Both the international regime for toxic substances and the one for human rights are similar in that they are each comprised of several individual international instruments with varying degrees of legal character. The creation of a periodic review under the future framework for chemicals and wastes could create synergies across various United Nations initiatives, including the follow-up and review mechanism of the Sustainable Development Goals.⁵⁵

81. Under a peer review process for chemicals and wastes similar to the universal periodic review, each State would declare actions taken to develop effective systems for toxic chemicals and wastes in meeting their international obligations.⁵⁶ States could report on actions taken towards reducing toxic exposure and other States and stakeholders may evaluate these steps and offer recommendations for improvement and follow-up.

82. While the universal periodic review is a State-driven peer review process, participation of various stakeholders, including non-governmental organizations and national human rights institutions, is considered a critical component of the mechanism. The review is based on three categories of documents: a national report by the State concerned, prepared through a broad consultation process at the national level with all relevant stakeholders; a summary of information concerning the State's interactions with treaty bodies and special procedures and contained in other relevant United Nations documents; and information from other stakeholders.⁵⁷ The participatory approach of the universal periodic review is highly compatible with the participatory nature of the Strategic Approach.

83. The universal periodic review has helped to strengthen national level coordination, through the involvement of various State entities in national coordination mechanisms for reporting and follow-up.⁵⁸ The success of the universal periodic review is shown through concrete results at national levels, where its recommendations feed into national development initiatives,⁵⁹ for example through legal reforms and national action or implementation plans.⁶⁰ Such coordination between governmental and non-governmental entities in various sectors, including health, trade, agriculture and the environment, is crucial for the protection of health and the environment from toxic substances.

⁵³ The idea was suggested by the Center for Governance and Sustainability in March 2018 (see SAICM/IP.2/INF.14, annex) and others. Regarding the application of a peer review under the Convention on Biological Diversity, see Ana Maria Ulloa, Kurt Jax and Sylvia I. Karlsson - Vinkhuyzend, "Enhancing implementation of the Convention on Biological Diversity: a novel peer-review mechanism aims to promote accountability and mutual learning", *Biological Conservation*, vol. 217 (January 2018), pp. 371–376.

⁵⁴ See Human Rights Council, universal periodic review, at www.ohchr.org/EN/HRBodies/UPR/Pages/UPRMain.aspx.

⁵⁵ Geneva Academy, research brief.

⁵⁶ See Human Rights Council, universal periodic review at www.ohchr.org/EN/HRBodies/UPR/Pages/UPRMain.aspx.

⁵⁷ Human Rights Council resolution 5/1, annex.

⁵⁸ Human Rights Council, thirty-seventh session, annual high-level panel discussion on human rights mainstreaming.

⁵⁹ Danish Institute for Human Rights, "Human Rights in Follow-up and Review of the 2030 Agenda for Sustainable Development" (Copenhagen, May 2016), p. 34.

⁶⁰ Human Rights Council, thirty-seventh session, annual high-level panel discussion on human rights mainstreaming.

84. Key outputs of the universal periodic review process are the conclusions and recommendations, as well as the voluntary commitments of the State concerned, which together contribute to national implementation strategies and provide a basis for improved performance nationally.⁶¹ These recommendations may identify key issues and provide guidance for implementation.⁶² They support follow-up because they address critical gaps in implementation emerging in the light of existing human rights obligations, national context⁶³ and political commitments through previous universal periodic review cycles.⁶⁴ As States are required to report on steps taken to implement previous recommendations, the periodic review process promotes progressive development in the areas identified for further action. The future framework for chemicals and waste should accommodate a structure that allows for State-specific recommendations.

85. The universal periodic review system does not explicitly include responsibilities of businesses to respect human rights. However, while implementation of recommendations under the review primarily rests with the State, relevant stakeholders also have a responsibility to implement relevant commitments.⁶⁵ This allows for provision for responsibilities of businesses related to the State in question, including those in relation to exposure to toxic chemicals, which could benefit from emphasis in such an accountability mechanism.

3. An updated definition of a chemical of “global concern”

86. Today, chemicals of global concern are those toxic industrial chemicals and hazardous pesticides used, produced and released by global supply chains. States should recognize that a “chemical of global concern” includes the full life cycle of toxic substances used, produced and released by global supply chains, in addition to those that travel significant distances through the environment and migratory species.

87. The production, use and release of toxic substances in global supply chains are resulting in transboundary impacts. Industrial chemicals are often used in international supply chains to manufacture products for export, such as textiles, electronics, furniture and building materials, and hazardous pesticides applied to produce food and other products for consumption in other countries. These industrial chemicals and pesticides themselves are often traded across borders. And they are often the toxic by-products of consumption and production, whether from the extraction of natural resources such as metals, minerals and petroleum, energy generation or waste disposal.

88. However, the vast majority of toxic chemicals with transboundary impacts are excluded from consideration under global measures because they do not travel long distances through environmental media. For example, the criteria for listing a substance under the 2001 Stockholm Convention necessitate evidence of long-range environmental transport through wind, water or migratory species.⁶⁶ As a result, perhaps thousands of toxic substances that do not easily degrade, accumulating in people and wildlife, are excluded from the scope of the Convention. Many of these substances pose a serious and unnecessary threat to numerous human rights. A similar,

⁶¹ See Human Rights Council resolution 5/1, annex, paras. 1 and 4. See also Geneva Academy, research brief, p. 3.

⁶² OHCHR, “Human rights, the SDGs and the 2030 Agenda for Sustainable Development”, available at www.ohchr.org/Documents/HRBodies/UPR/SDGs_2030_Agenda.pdf.

⁶³ General Assembly resolution 60/251, para. 5 (e) and Human Rights Council resolution 5/1, para. 3.

⁶⁴ Human Rights Council, thirty-seventh session, annual high-level panel discussion on human rights mainstreaming.

⁶⁵ Human Rights Council resolution 5/1, annex, para. 33.

⁶⁶ Stockholm Convention, annex D.

narrow interpretation of what constitutes a substance of global concern was recently articulated in the 2013 Minamata Convention on Mercury.⁶⁷

89. This woefully outdated and narrow perspective of what constitutes a chemical of global concern is enabling the exploitation of workers and local communities, particularly in developing countries and emerging economies that produce much of the products that the world consumes. Complex and opaque global supply chains continue to exploit lower standards of human health and environmental protection, leading to rampant abuses of human rights.

4. A mechanism to phase-out chemicals of global concern

90. Duties and responsibilities to prevent exposure to toxic substances extend beyond borders. The transboundary transfer of toxic production and disposal to countries with lower levels of protection should be considered a form of exploitation if reasonable measures are not taken to protect those at risk.

91. Reasonable measures include global standards for the production, use and disposal of hazardous substances. However, States have intentionally excluded many chemicals of concern from the scope of existing treaties, preventing the development of global standards for thousands of toxic substances that remain in use around the world. This has enabled the transboundary transfer of toxic production and disposal to countries with lower levels of protection, creating costly challenges for States and businesses to trace supply chains to ensure that the rights of workers and communities are not abused by exposure to toxic substances.

92. There are grave concerns that various companies are exploiting workers and particularly children in some countries by exposing them to toxic risks they would not allow for workers back home. Exposing children to toxic substances at work is indefensible. States are obliged to take reasonable measures to prevent and minimize exposure to toxic substances that occur outside their territories and that give rise to infringements of applicable rights owing to the activities of business entities over which they can exercise control and that are reasonably foreseeable.⁶⁸ There are numerous toxic substances that should be subject to global bans or restrictions and which, though with well-characterized risks to life, health and development, are still produced and used in global supply chains, despite the availability of safer alternatives. An international instrument should be developed to phase out these chemicals of global concern.

93. Special Rapporteurs have called for the creation of a treaty to prohibit the production and use of certain substances and classes of substances that present serious and in many cases unnecessary risks. For example, the Special Rapporteur on the right to food and this mandate holder, in their report on the impacts of pesticides in food and agricultural production on workers and communities, concluded that the international community must work on a comprehensive, binding treaty to regulate hazardous pesticides throughout their life cycle, taking into account human rights principles (see [A/HRC/34/48](#)). They recommended that such an instrument should:

(a) aim to remove existing double standards among countries that are particularly detrimental to countries with weaker regulatory systems; (b) generate policies to reduce pesticide use worldwide and develop a framework for the banning and phasing-out of highly hazardous pesticides; (c) promote agroecology; and (d) place strict liability on pesticide producers (*ibid*). This mandate holder and his predecessor have also urged the global community to develop a global treaty for toxic industrial

⁶⁷ Minamata Convention, preamble.

⁶⁸ Committee on Economic, Social and Cultural Rights, general comment No. 24 (2017), paras. 30–32.

chemicals (see, for example, [A/HRC/21/48](#), [A/HRC/36/41/Add.1](#), [A/HRC/33/41/Add.2](#) and [A/HRC/39/48/Add.2](#) (forthcoming)).

94. States should seize the opportunity of ongoing discussions to develop a new global instrument by 2030 that would ensure that chemicals of global concern are identified and the process of phase-out or effective restriction has begun.

5. Greater attention to both the gendered impact of exposure to toxic substances and its disproportional impact on children

95. Equality and non-discrimination are fundamental to human rights law.⁶⁹ All human beings are equal and by virtue of this and the inherent dignity of each person, all must have equal protection from toxics. States have elevated duties to protect those who are disproportionately affected by toxic exposures under international human rights law.

96. Biological differences between men and women, such as physiological and hormonal differences, create differing susceptibilities to the effects of exposure to toxic chemicals.⁷⁰ Women are more likely to store higher levels of environmental pollutants in their tissues than those found in men. During pregnancy, lactation and menopause, women's bodies undergo changes that may increase their susceptibility to health impacts from toxic exposures. Furthermore, owing to differences in social roles, including occupational and household roles, and prevailing harmful gender stereotypes, women and men are exposed differently to toxic chemicals with respect to, among other things, the substances encountered and the degree of exposure.

97. The age at which one is exposed to toxic substances is a critical factor in whether the exposure may result in adverse health impacts. Childhood exposure to toxics is interrelated with the gender dimension of the issue.

98. The future framework for chemicals and wastes should have a special focus on the gendered impact of exposure and on childhood exposure. It may wish to create specific obligations for States to take expedited action on well-characterized threats to life and health regarding children and different genders, without waiting for the development of national, regional or global mechanisms to phase out such threats, such as lead in paint.

B. Business and human rights initiatives

99. For over 23 years, under this mandate grave allegations of human rights violations and abuses due to business activities have been received and responded to. Most of these have transnational links, and most are — unsurprisingly — abuses of the rights of the most vulnerable, including the poor in countries of all levels of development; indigenous peoples; women and children; and migrants and minorities, among others.

100. A common denominator under many emblematic business and human rights cases is toxic pollution and contamination, which have traversed the life cycle of hazardous substances, implicating sectors from extractive industries, to the manufacturing of industrial chemicals, pesticides and consumer products, food and agricultural production, energy generation, transportation and waste disposal, among others. These cases have often illustrated accountability gaps for victims; but, in virtually every case, the tragedy has equally illustrated the gross failure of States and businesses to prevent violations and abuses.

⁶⁹ See, for example, the Universal Declaration of Human Rights, art. 2.

⁷⁰ United Nations Development Programme, "Chemicals and gender", Gender Mainstreaming Guidance Series (February 2011).

101. Since 2015, all of the reports under this mandate to the Human Rights Council discuss the duties and responsibilities of States and businesses regarding toxic chemicals, pollution and other hazardous substances and wastes. In the same vein, the principles on protecting workers from toxic exposures, which the Special Rapporteur proposed in his 2018 report, are intended for use in various discussions on business and human rights, as well as discussions in other forums.

102. There is an increasing number of efforts to compel businesses to conduct human rights due diligence. Following the endorsement of the Guiding Principles on Business and Human Rights in 2011, France has made human rights due diligence mandatory, while many other countries have adopted national action plans encouraging businesses to carry out human rights due diligence.⁷¹ There are also efforts driven by business associations through their internal processes calling for their members to put in place human rights due diligence, thereby supporting State - led initiatives in this direction.

103. Despite these efforts, many industries have not adequately implemented the Guiding Principles on Business and Human Rights with respect to toxic chemicals and pollution. Some major chemical industry associations and several of their member companies have not implemented such a requirement as part of a commitment to responsible care, despite its outgrowth from a seminal case of a human rights violation, the 1984 tragedy in Bhopal, India. In the course of meeting with businesses during country visits during the past four years, the Special Rapporteur has only personally encountered one chemical company undertaking human rights due diligence.

104. Various industry-wide initiatives across a number of industries and sectors are provided by companies in response to communications about alleged human rights abuses and violations. These are presented as being equivalent to human rights due diligence. Some have elements that have considerable merit and are commendable. However, the majority of these initiatives follow neither the letter of the Guiding Principles on Business and Human Rights nor the spirit of human rights in general. Many do not adequately consider toxic chemical and pollution related risks.

105. In July 2018, an intergovernmental working group established by the Human Rights Council produced a zero-draft of a new treaty to “regulate, in international human rights law, the activities of transnational corporations and other businesses.” This is a welcome development from the perspective of the mandate holder, which may help to address some of the impacts of toxic chemicals in global supply chains and the systemic challenges facing victims who struggle to access an effective remedy.

106. Studies suggest that only the smallest fraction of victims of exposure to hazardous substances have access to remedies (see [A/HRC/39/48](#)). Major obstacles to accountability and remedy include the unreasonably high burden of proof, the long latency periods for consequences to manifest in some cases and the difficulty in establishing causation; substantial information gaps with respect to the identification of hazards, measurement of exposure and specification of the epidemiological impacts; possible exposure to a multitude of different substances in various occupational settings and over a working lifetime; and the provisions of contractual relationships between suppliers and purchasers which can shift responsibility up or down a supply chain.

107. Far too many countries rely to an unreasonable extent on the prospect of legal liability and reputational damage to prevent and mitigate harm from toxic exposures resulting from business activities. However, a “damage and sue” model of

⁷¹ Working Group on the issue of human rights and transnational corporations and other business enterprises, informal note, available at www.ohchr.org/Documents/Issues/Business/Session18/CompilationNAPReferencesToDi%20ligence.pdf.

enforcement is not human rights prevention. Far too often, penalties and fees for violations simply amount to a cost of doing business, not prevention.

108. Solutions exist to make tremendous advancements in reducing the burden of disease through the prevention of exposure, which is required to realize the rights to life and health, among others. States are failing to sufficiently compel businesses to adopt safer alternatives, instead enabling companies to exploit the most vulnerable, such as women and children, particularly those living in poverty, to the cruelty of unnecessary and unjustifiable exposure to toxics and the suffering that it brings.

109. States should compel all businesses in their territory or jurisdiction to actively monitor, identify and prevent human rights violations. Compliance with the law alone should not be viewed as sufficient for the risks businesses create of exposure to hazardous substances. Legislation for toxic chemicals and pollution in general continues to lag behind the pace of innovation and economic expansion, resulting in many of the grave impacts described above. Traceability and transparency are crucial elements of human rights due diligence, and must be ensured throughout supply and value chains. Furthermore, States should ensure that human rights due diligence includes toxic chemical and pollution risks.

IV. Conclusions and recommendations

110. A broader, more detailed discussion is needed on human rights and exposure to hazardous substances, bringing in all relevant considerations, including ethical and medical perspectives. The Special Rapporteur aims to help to develop a more robust discussion on what is an acceptable level of exposure in the coming years.

111. The global community should adopt an international instrument to prevent and minimize toxic exposures. Such an instrument could be under the “post-2020 framework for chemicals management.” It should contain:

- (a) A definition of a substance of global concern based on presence in global supply and value chains;**
- (b) An explicit obligation on every State to have effective systems to prevent and minimize toxic exposures;**
- (c) A universal periodic review or other mechanism of State efforts to prevent and minimize toxic exposures;**
- (d) A mechanism to phase out chemicals of global concern;**
- (e) Obligations for States to take expedited action on well-characterized threats to life and health regarding children and different genders.**

112. States should support and actively engage in the development of legally binding instruments on businesses at the national, regional and global levels. The Special Rapporteur encourages:

- (a) States to compel businesses to include toxic chemicals and pollution risks in their human rights due diligence to identify, monitor, prevent and mitigate impacts on human rights;**
- (b) Inclusion of the proposed principles in the Special Rapporteur’s 2018 report to the Human Rights Council on workers’ rights.**

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**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

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Item 4c of the provisional agenda*

**Progress and gaps towards the achievement of the 2020
goal of sound chemicals management: Emerging Policy Issues**

**Annex to International Conference on Chemicals
Management resolution II/4 - Modalities for considering
emerging policy issues**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the Annex to Conference resolution II/4 - Modalities for considering emerging policy issues.

* SAICM/OEWG.3/1.

Annex:**Annex to ICCM resolution II/4
Modalities for considering emerging policy issues****Introduction**

The process for the consideration of emerging policy issues by the International Conference on Chemicals Management will be open and transparent. It will be facilitated by the secretariat and provide for the participation of all stakeholders.

A. Call for nominations

1. Given that the nature of emerging policy issues will vary according to the perspectives and needs of different stakeholders, the process for nominating emerging policy issues should be an open one in which any Strategic Approach stakeholder is free to participate. The nomination procedure will be published on the Strategic Approach website. To promote communication at the national level, nominations should be copied to Strategic Approach focal points. Regions may also wish to add the subject to their meeting agendas. Because emerging policy issues will arise and evolve over time, nominations will be allowed at any point but will only be formally invited from stakeholders once during the period leading up to each session of the Conference. This periodic call for the nomination of issues will serve to encourage the systematic monitoring, review and regular discussion of emerging policy issues among Strategic Approach stakeholders. To allow for sufficient time for subsequent steps in the procedure, nominations will need to be submitted 18 months in advance of the session of the Conference at which they will be considered.

B. Submission of initial information

2. In nominating an emerging policy issue for consideration by the Conference, a proponent will be required to complete a questionnaire that includes the criteria listed below in subparagraph (b). The information to be submitted to the secretariat should include:

- (a) Information demonstrating why a given issue is considered to be an emerging policy issue, in particular how it is consistent with the definition of an emerging policy issue, i.e., an issue involving any phase in the life cycle of chemicals and which has not yet been generally recognized, is insufficiently addressed or arises from the current level of scientific information and which may have significant adverse effects on human health and/or the environment;
- (b) Information demonstrating how the issue meets the following criteria:
 - (i) Magnitude of the problem and its impact on human health or the environment, taking into account vulnerable subpopulations and any toxicological and exposure data gaps;
 - (ii) Extent to which the issue is being addressed by other bodies, particularly at the international level, and how it is related to, complements, or does not duplicate such work;
 - (iii) Existing knowledge and perceived gaps in understanding about the issue;
 - (iv) Extent to which the issue is of a cross-cutting nature;
 - (v) Information on the anticipated deliverables from action on the issue.

3. Proponents are encouraged to include a description of proposed actions to be considered in moving forward on emerging policy issues, including a rationale for how proposed actions would address the emerging policy issues identified. Proponents are encouraged to consider a wide range of options for action, which would include identification of any tools, institutions and other mechanisms and expected resources that could support the proposed action, as described in paragraph 4 below.

4. Actions that proponents might want to consider may include:

- (a) Dissemination of information through the secretariat's clearing-house function or other mechanisms;

- (b) Recommendations from the Conference, which could include requests for action addressed to the governing bodies of intergovernmental organizations, Governments, scientific bodies, civil society stakeholders and the private sector;
- (c) Initiation of follow-up work under the auspices of the Conference, including through intersessional work at regional meetings, workshops, training sessions, webinars, teleconferences, work by subsidiary bodies, the secretariat or other mechanisms;
- (d) Specific commitments by Governments, civil society, intergovernmental organizations and the private sector, such as intersessional work or partnerships;
- (e) Relevance, as appropriate, to the Global Plan of Action and the Overarching Policy Strategy of the Strategic Approach or other mechanisms for providing capacity-building to proponents.

C. Initial review and publication of submissions

5. The secretariat will check nominations for new emerging policy issues against the agreed definition and criteria with the aim of assisting proponents in completing their nominations and sorting the nominations for future prioritization. Proponents will be contacted to provide any missing information.

6. The secretariat will compile a list of nominations, annotated with a summary of information on each of the criteria. Similar nominations will be clustered so that similar issues can be considered in thematic groups. The list of nominations and the nominations themselves will be made publicly available and an invitation to provide comments will be issued 15 months prior to the session of the Conference at which they will be considered. Comments received by the secretariat will be made publicly available.

7. The proponents of an issue will have an opportunity to revise their nomination to take into account comments or to clarify information provided and to work with other proponents to consolidate nominations that are similar or complementary. Revised nominations must be submitted to the secretariat 12 months in advance of the session of the Conference at which they are to be considered.

8. The secretariat will consolidate a final list of nominations, annotated with a summary of information on each of the criteria.

D. Prioritization of submissions

9. After publication of the nomination list, the regions may prioritize submissions by engaging formally the full range of their stakeholders. In doing so, they are encouraged to consider the criteria in paragraph 2 (b), above, and to communicate the priorities to the secretariat. Such consultations will be pursued through regional focal points and with national focal points, including non-government participants, at regional meetings or through other mechanisms.

10. The secretariat will compile input received from the regional consultations and input from other stakeholders on the prioritization of submissions.

E. Inclusion of emerging policy issues on the provisional agenda of the Conference

11. The Open-ended Working Group will consider the regional inputs and other information to assess the proposals, taking into account the criteria outlined in paragraph 2 (b) above. It should propose a limited number of priority emerging policy issues to the Conference for its consideration. Those issues will be submitted for inclusion on the provisional agenda of the next session of the Conference in accordance with the rules of procedure of the Conference.

12. In the event that an issue is nominated but not included on the provisional agenda for a session of the Conference, its proponent may seek other ways to focus attention on it. This might include:

- (a) Disseminating information about the issue through the secretariat's clearing-house function;
- (b) Including the issue as a topic for workshop agendas or internet-based consultations;
- (c) Encouraging regional groups to include the issue on the agenda of regional meetings;
- (d) Forwarding the submission to other forums or individual stakeholders with relevant mandates for their consideration;
- (h) Highlighting the issue as a possible priority for Strategic Approach participants;
- (i) Making Strategic Approach participants aware of any funding associated with the proposal that may be available for intersessional work, bilateral projects or other opportunities.



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Strategic Approach to International Chemicals Management

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**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

Global Chemicals Outlook II: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development (advance version)

Note by the secretariat

The United Nations Environment Programme has informed the secretariat that the Global Chemicals Outlook II (advance version) will be accessible via the following link: [GCO-II link](#) ([alternative link](#)). It will be formally published by the end of April 2019. The report will be launched electronically at the technical briefing on the Global Chemicals Outlook II (Monday, 1 April 2019, 10:00-13:00; Room: Club Este/Piso 1).

* SAICM/OEWG.3/1.



SAICM/OEWG.3/INF/26



**Strategic Approach
to International
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**Open-ended Working Group of the International Conference
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Third meeting**

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Item 4 (d) of the provisional agenda*

**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Implementation of the health sector strategy**

**World Health Organization
Report on Progress in the Implementation of the Strategic
Approach for the period 2014-2016**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the World Health Organization on the health sector progress in the implementation of the Strategic Approach for the period 2014-2016. The report is presented in the annex as received by the secretariat and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

World Health Organization Report on Progress in the Implementation of the Strategic Approach for the period 2014-2016

Background

In accordance with paragraph 24 of the Overarching Policy Strategy of the Strategic Approach to International Chemicals Management,¹ the International Conference on Chemicals Management undertakes periodic reviews of the Strategic Approach. Two of the functions of the Conference in that regard are to receive reports from all relevant stakeholders on progress in the implementation of the Strategic Approach and to disseminate information as appropriate, and to evaluate the implementation of the Strategic Approach with a view to reviewing progress against the 2020 target and taking strategic decisions, programming, prioritizing and updating the approach as necessary.

In paragraph 18 of its resolution IV/1, the International Conference on Chemicals Management requested the secretariat to develop a progress report on the implementation of the Strategic Approach for the period 2014–2016 and an analysis of the 20 indicators of progress, for consideration by the Open-ended Working Group at its third meeting. The Conference also directed the Open-ended Working Group to consider the need for a report for the period 2017–2019 for consideration by the Conference at its fifth session, in 2020.

A full report containing a complete analysis of the progress made in the implementation of the Strategic Approach for the period 2014–2016 is available as an information document (SAICM/OEWG.3/INF/4) and a summary report is available as a meeting document (SAICM/OEWG.3/5).

The present report, prepared by the World Health Organization, focuses on the progress made in implementing the Strategy on strengthening the engagement of the health sector in the implementation of SAICM² adopted in 2012 at the third International Conference on Chemicals Management.

An online survey was used for collecting information on the progress made in the implementation of the SAICM. Throughout the survey, there were questions specific to the health sector engagement in certain activities. The questions in the survey that were specific to the engagement of the health sector were as follows:

1. *B5.2B Please describe the engagement of the health sector in any of the monitoring or surveillance activities you identified in question B5.1
2. *C2.2B Please describe the nature of involvement by the health sector in communicating with the groups you identified in question C2.1
3. *C3.2B Please briefly describe the nature of involvement by the health sector institutions or professional bodies in the research you identified in question C3.1

¹ Available from www.saicm.org/Resources/Publications/tabid/5507/language/en-US/Default.aspx.

² https://www.who.int/ipcs/capacity_building/chemicals_management/saicm_iccm3_en.pdf?ua=1 (last accessed 5 March, 2019)

4. *C4.1.1 If any of the websites identified in question C4.1 are hosted by a health sector organization, please briefly describe below and provide web links
5. *D2.2 In 2012, the International Conference on Chemicals Management adopted a strategy for strengthening the engagement of the health sector in chemicals management. Please briefly describe in the space that follows any activities undertaken by your government or organization over the 2014-2016 period to support implementation of this strategy.

Submissions were received from 54 Governments, 5 intergovernmental organizations, 3 non-governmental organizations and 1 civil society and 2 private sector bodies (see Appendix I).

The present report uses the SAICM regional groupings for much of the analysis: Africa (AFR), Asia-pacific (ASP), Central and Eastern European (CEE), Latin American and the Caribbean (LAC), and Western Europe and Others group (WEOG). In addition, a 'World' grouping represents the international organizations including United Nations Environment Programme (UNEP), the World Health Organization (WHO), United Nations Development Programme (UNDP), The United Nations Institute for Training and Research (UNITAR), and Organization for Economic Co-Operation and Development (OECD).

As noted in the full report, the response rate was lower for the most recent reporting cycle. The CEE and WEOG regions were highly represented in the overall survey responses. A subset of the respondents provided a response to the mandatory health sector specific questions.

Progress Results

Engagement of the health sector in monitoring or surveillance activities on selected environmental and human health priority substances.

Ninety-two percent of the respondents reported they have an environmental monitoring programme, followed by food and/or drinking water (82%), chemical incidents (80%), cases of human poisoning (80%), cases of occupational-related diseases (77%), human monitoring (77%)³ and some have consumer products monitoring programmes. Many countries noted that there have been significant changes or new developments in their environmental monitoring, human poisoning monitoring, and human biomonitoring programmes. Most respondents reported that the environmental sector is the most involved in monitoring and surveillance activities, followed by health.

Thirty-seven respondents provided additional information on their monitoring and surveillance programmes. The health sector responses show that the health sector mainly focuses on human biomonitoring, food and/or drinking water, and human poisoning monitoring and/or surveillance activities.

Multiple countries, mostly in the CEE and LAC regions responded that their health sector is engaged in monitoring human poisoning and/or poison centres. Fifty-seven percent of government respondents (14 countries)⁴ indicated that they have identified a need for institutional-strengthening in regard to poison centres⁴.

In the CEE region, three respondents reported that their health sector is involved in environmental monitoring and one responded that that their health sector is not involved in any monitoring or

³ para 46 in SAICM 2014-2016 Full Progress Report.

⁴ para 107 *ibid*

surveillance activity as they do not have the capacity to do so. In the LAC region, respondents reported that their health sector is engaged in monitoring stack emissions from boilers to ovens and that they have specific regulations for cement kilns.

In the WEOG region, one respondent has a specific programme targeting the north that works toward reducing contaminants in traditional food to ensure that chemicals are not present in foods at levels that would pose an unacceptable risk for health.

Three respondents from non-governmental organizations stated that they are engaged in monitoring and/or surveillance activities related to drinking water and environmental monitoring, in particular spray drift monitoring.

Involvement by the health sector in communicating with vulnerable groups

More than 80 percent of respondents selected at least five vulnerable groups that they communicate with. Workers, the general public, children, consumers and women were the five most frequently selected vulnerable groups; having received between 82 to 94 percent response rates.⁵ Indigenous people were the least selected vulnerable group.

All regions responded that the communication from the health sector to vulnerable groups is done through publishing materials (e.g. fact sheets, guidelines) online and/or printed media, public awareness campaign, social media, and organized training. Some participate in prevention weeks (e.g. lead poisoning week), or host information days. One respondent from CEE reported that the health sector uses interviews on radio and television with relevant government officials and scientists as way to engage vulnerable groups.

Most communications from the health sector that target vulnerable groups are focused on chemicals (including toxic metals such as lead and mercury) and pesticides. This appears to be correlated with “workers” being identified as the top vulnerable group as they are most exposed to chemicals and pesticides through their work. One respondent in WEOG reported that they communicate recalls of various consumer products when they are found to be non-compliant under respective legislations.

Some respondents reported that their health sector collaborates with regional offices, or through inter-sectoral working groups to communicate information to the vulnerable groups. One respondent reported that they cooperate and coordinate with national institutions for chemical authorities to meet biannually.

Indigenous people are identified as one of the main vulnerable groups in one country and communication to this group is done through partnerships with public health and medical practitioners to develop culturally appropriate health information.

Respondents in the ‘World’ category reported involvement in the communications around lead in paint, chemicals in products, and mercury in products (e.g. dental amalgam), and how information is communicated by WHO to its Member States and subsequently to their ministries of health.

Involvement by health sector institutions or professional bodies in chemical safety related research

Seventy-five percent of respondents selected the environment and 72 percent indicated the health sector as the two most common sectors involved in research programmes.⁶

⁵ Para 65 *ibid*

⁶ Para 71 *ibid*

Thirty-three respondents provided additional information on the nature of involvement by health sector institutions or professional bodies in chemical safety related research. Some (mostly in AFR and a few in LAC) responded that their health sector has no involvement or the health sector involvement is unknown. Few respondents provided the name of the institutions involved and did not describe the nature of their health sector involvement.

In the WEOG region, some respondents reported that it is common for the health sector to: collaborate with other governmental departments and institutions (universities, labs, hospitals) to design, conduct and analyse the outcome of the study, as well as collaborating with other countries; receive funding for studies for decision making and implementation of existing legislation; providing funding for biomonitoring studies.

A couple of respondents from the CEE region described their health sector being involved in almost all chemical safety related research programmes, involved in preparing of documents, or initiated and implementing projects to address health issues.

A couple of respondents from the ASP region reported they are involved in different types of research including environment and children's study; development of tolerable daily intake and acceptable daily intake for various chemicals; health surveillance; and disease investigations.

Non-government organizations responded that they are involved through OECD's work, through IUPAC Chemistry and Human Health Division, and cooperating with WHO.

Involvement of the health sector in maintaining websites that provide public information related to chemical safety

The topic of chemical safety laws, hazards and risks associated with chemicals, and chemicals in use were covered in the websites of 83, 82 and 78 percent of the stakeholders.⁷

Thirty respondents from all regions, the 'World', and non-governmental organizations provided links to websites where the public can find information related to chemical safety laws, hazards and risks associated with chemicals, and chemicals in use. Most provided multiple links that lead to a site maintained by the health sector followed by the environment sector and in some cases agriculture, nature, and/or occupational health and safety sector websites. A few respondents provided links that lead to blogs that are maintained by the government.

The LAC region provided specific links to the diagnosis and treatment of mercury poisoning, and lead.

Implementation of the strategy for strengthening the engagement of the health sector in chemicals management for the period of 2014-2016

Thirty-two respondents noted the work undertaken by the health ministry to support the strategy. Some respondents reported that they collaborate with the environment ministry to carry out the work.

One respondent in the WEOG region championed the World Health Assembly Resolution 69.4 on enhancing health sector participation in SAICM and international chemicals management towards the 2020 goal and beyond. This respondent also provided assistance to the WHO in the form of an employee

⁷ Para 73 *ibid*

on secondment to assist with the development and implementation of the “Road map to enhance health sector engagement in the SAICM towards the 2020 goal and beyond”.

One respondent in the WEOG region also noted that their health sector is: supporting the ministerial conferences of the European Environment and Health Process that provides a unique intersectoral policy platform bringing together relevant sectors and partners to shape policies and actions on environment and health; participated in the European Human Bio monitoring Initiative; and continues with the implementation of the Action Programme Environment and Health (APUG).

In the LAC region, respondents reported the implementation of the different conventions, and the “Development and Implementation of a Sustainable Management Mechanism for POPs in the Caribbean” project funded through the Global Environment Facility (GEF).

One respondent in the AFR region reported that their ministry of health and ministry of environment established a strategic alliance for the implementation of the Libreville Declaration at the national level.

One respondent from the ASP region reported they are strengthening the governance of chemicals management by including health sector into chemicals management.

One respondent in the CEE region reported their health sector was involved in the development of their strategy for chemicals management and they are now in the process of drafting a new strategy for chemicals management for 2019-2022. Another respondent in CEE responded that the health ministry is undertaking multiple activities including: registration of chemicals product and pesticides; risk reduction programmes for persistent organic pollutants; and research links between environmental pollution and public health.

Some of the responses from non-governmental organizations include: involvement in the Health Care Waster Management project; raising awareness of health risks from chemicals, heavy metals (e.g. lead, mercury); working with health care workers on issues related to pesticides; and helping stakeholders to put capacity in place for sound management of chemicals.

Discussion and Conclusion

The progress on the International Health Regulations (2005) and the Health Risk Assessment tool can be found in the full report.

Each region is at different stages of implementation, they each have different challenges, priorities and approaches in how they implement the strategic approach. In general, the health sector continues to make progress in their involvement and engagement in the strategic approach.

Future Work

The seventieth World Health Assembly approved the Road map to enhance health sector engagement in the strategic approach to international chemicals management towards the 2020 goal and beyond. The road map identifies concrete actions where the health sector has a lead or an important supporting role to play in the sound management of chemicals, recognizing the need for multi-sectoral cooperation. As a companion to the road map, WHO developed the WHO chemicals road map workbook (the workbook) which offers a structured way to work through the road map, choose priorities, and plan activities. The health sector in all areas (government, civil society, NGOs, and IGOs) are encouraged to use the WHO chemicals roadmap to develop their own implementation plans to achieve the sound management of chemicals throughout their lifecycle.

Appendix I:

List of stakeholders submitting information for the report through the online questionnaire

The following 54 Governments submitted a complete report: Argentina, Austria, Barbados, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, Colombia, Costa Rica, Côte d'Ivoire, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Guyana, Honduras, Hungary, Ireland, Italy, Japan, Latvia, Lesotho, Lithuania, Luxembourg, Madagascar, Malaysia, Malta, Monaco, Montenegro, Netherlands, Peru, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Thailand, the former Yugoslav Republic of Macedonia, Trinidad and Tobago, United Kingdom of Great Britain and Northern Ireland, United Arab Emirates and Yemen.

The following five intergovernmental organizations submitted a complete report: the Organization for Economic Cooperation and Development (OECD), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the United Nations Institute for Training and Research (UNITAR) and the World Health Organization (WHO).

Six non-governmental organizations submitted complete reports, of which four were civil society organizations (Armenian Women for Health and Healthy Environment, Pesticide Action Network, Society for Ecological Restoration, and Central American Institute for Studies on Toxic Substances) and two were private-sector organizations (International Council of Chemical Associations and American Petroleum Institute).



SAICM/OEWG.3/INF/27



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**The Strategic Approach and the sound management of
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A submission from the German Environment Agency – Paper on Global Governance of Chemicals and Waste

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the German Environment Agency on the global governance of chemicals and waste. The report is presented in the annex as received from the German Environment Agency and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

On Global Governance of Chemicals and Waste

By Alf Wills, Maro Luisa Schulte, Nils Simon¹



Preamble

At the 4th International Conference on Chemicals Management (ICCM4) held in 2015, delegates established an intersessional process (IP) to prepare recommendations regarding the Strategic Approach to International Chemicals Management (SAICM) and the sound management of chemicals and waste (SMCW) beyond 2020.

The Co-chairs of the IP were mandated to draft a paper to serve as the basis for discussion at the 3rd Open-ended Working Group (OEWG3) to be held in Montevideo, Uruguay on 2-4 April 2019. This paper proposes that the OEWG3 reflects on two elements of work:

First, preparing “recommendations for a voluntary multi-sectoral, multi-stakeholder instrument that would be forwarded for consideration and decision at ICCM5”. In line with discussion in the IP to date, this element is the substantive focus of the Co-Chairs’ Paper, and is often referred to as “SAICM 2.0”.

Second, considering “a possible broader platform to address the fragmented nature of initiatives and agreements to promote international chemicals and waste management”². Since the Co-chairs’ Paper predominantly deals with the first element, there is a need for further input on this second element. This paper was commissioned by the German Environment Agency to further elaborate on the second element of work, i.e. a possible broader platform for SMCW governance beyond 2020.³ The authors were supported by an Ad Hoc Advisory Committee with representatives from governments and intergovernmental organisations. Their insights and comments were highly appreciated in the process of preparing this paper.⁴

1. The context of international chemicals and waste governance

The sound management of chemicals and waste is an indispensable contribution to the implementation of the 2030 Agenda and the Sustainable Development Goals (SDGs). Chemicals are essential for producing pharmaceuticals, providing clean drinking water, producing food and for manufacturing goods, such as electronic equipment, to name just a few examples. As such, chemicals are an increasingly important part of the world’s economies, and global chemicals sales are projected to almost double by 2030 compared to 2017, according to the second edition of the Global Chemicals Outlook (GCO-II).⁵

Consequently, there is a trend of growing chemicals pollution and exposures from multiple sources, posing severe risks to public health and the environment, and thus to sustainable development. Many countries still have insufficient capacities for the sound management of chemicals and waste, particularly developing countries. Implementing the chemicals- and waste- related SDGs is therefore a considerable challenge that needs to be addressed much more forcefully now and in future. This

¹ Contact: schulte@adelphi.de

² SAICM/OEWG.3/4 Sound management of chemicals and waste beyond 2020, paper prepared by the co-chairs; see also SAICM/OEWG.3/INF/2 Annotations to the paper by the Co-Chairs of the intersessional process on the Strategic Approach to International Chemicals Management and the sound management of chemicals and waste beyond 2020.

³ Funding was provided by the German Environment Agency under FKZ 3717654010.

⁴ The views expressed in this paper are those of the authors and do not necessarily imply endorsement by the German government, or by any member of the Ad Hoc Advisory Committee.

⁵ SAICM/OEWG.3/INF/3 Global Chemicals Outlook II Summary for Policymakers: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development.

requires the engagement of all relevant sectors and stakeholders towards the common goal: to drive progress towards sustainability in chemicals and waste management throughout the life-cycle.

1.1 Fragmentation in the governance landscape on chemicals and waste

A wide diversity of international, regional and national responses to the complex set of challenges associated with SMCW has been developed, including:

- **Legal instruments**, typically dealing with a limited, and specifically targeted, number of chemicals- and waste-related issues, such as the multilateral environmental agreements of Basel, Rotterdam, Stockholm, and Minamata Conventions; the Vienna Convention and its Montreal Protocol; as well as other relevant treaties, regulations and standards on international, regional, and national levels;
- **Voluntary guidelines and standards**, such as the Code of Conduct on Pesticide Management or the Globally Harmonized System of Classification and Labelling of Chemicals (GHS); the Chemicals in Products Programme (CiP); or those established through efforts like Zero Discharge of Hazardous Chemicals (ZDHC) in the textiles sector;
- **Intergovernmental organizations** (IGOs) have established work programs and initiatives on SMCW within their respective mandates, such as the WHO Chemicals Safety Programme, or established best practice standards like the OECD Guidelines for the Testing of Chemicals;
- **Support instruments or programmes**, including finance; knowledge exchange; capacity building and technology support, such as the Quick Start Programme (QSP), which will end in 2019, and the Special Programme on Institutional Strengthening under UNEP as elements of an integrated approach to long-term funding of the chemicals and waste agenda, including funds allocated under GEF and the Specific International Programme for Minamata; and
- **Voluntary initiatives** such as the Strategic Approach to International Chemicals Management (SAICM), collaborative efforts such as the UN Global Compact, private sector initiatives such as Responsible Care; and **multi-stakeholder partnerships** including the Global Alliance to Eliminate Lead Paint (GAELP) or the Household Waste Partnership.

Despite efforts to foster effective coordinated collaboration and cooperation, the multi-sector and multi-stakeholder character of the chemicals and waste cluster has resulted in its global governance landscape remaining fragmented. It is marked by uneven engagement of diverse stakeholders from multiple sectors. This appears to have hampered the potential overall impact and effectiveness of existing organisations, programmes and initiatives in the field.

Nine intergovernmental organisations are coordinating their chemicals and waste-related activities through the Inter-Organization Programme for the Sound Management of Chemicals (IOMC). These include the UN Environment Programme (UNEP), the World Health Organization (WHO), the Food and Agriculture Organization (FAO), the United Nations Development Programme (UNDP), the World Bank and others, with some MEA secretariats attending as observers. However, the IOMC is not fully representative and, for example, does not include the chemicals and waste related work of the transport sector (International Maritime Organisation and International Civil Aviation Organisation); or environmental goods and services trade sector (World Trade Organisation). While the IOMC does help to coordinate ongoing and upcoming activities, it has never been an instrument for system-wide planning and programming of chemicals and waste.

The “synergies process” within the Basel, Rotterdam and Stockholm Conventions (BRS) was similarly intended to facilitate coordination and led to the establishment of a joint Secretariat. However, the Minamata Convention may have its own secretariat, adding to the existing fragmentation. With the Ozone Secretariat, cooperation has mostly been of a sporadic nature. There is even less coordination with other binding frameworks or conventions, including the International Health Regulations, ILO Conventions, IMO London Convention or frameworks and institutions dealing with climate change,

biodiversity loss, or plastic pollution.

SAICM was founded as an encompassing forum to promote multi-sector and multi-stakeholder collaboration, cooperation and joint strategic planning, with the ICCM as its governing body. It has launched programs that foster multi-stakeholder coordinated collaboration and engagement across some sectors on identified emerging policy issues (EPIs) and other issues of global concern. However, existing progress reports as well as the draft independent evaluation of SAICM⁶ reveal that it has only been partially successful in achieving multi-sector and multi-stakeholder participation, engagement and consequent implementation. The majority of stakeholders are from the environment sector, with less participation from the health and labour stakeholders, and very limited participation by stakeholders from other sectors. Furthermore, budget constraints limit financial support to one participant per developing country at its meetings (or two in the case of an ICCM), which mostly fund the participation of national focal points (NFP), thus adding to the predominance of participants from the environment sector. Finally, to date, SAICM and ICCM have not been a significant incubator of multi-stakeholder SMCW partnerships, nor have they established a broadly used mechanism for effective information exchange or a means to evaluate the effectiveness of partnerships.

SAICM and the ICCM have likewise not been fully effective in fostering coordinated collaboration and cooperation. Each organisation taking part in the Strategic Approach participates within the parameters of their respective legal mandate. Every decision taken at the ICCM with relevance for an organisation needs to be internalized with a similar mirroring decision taken by its governing body, particularly when it has budgetary implications. This needs engaged governments or members willing to table ICCM decisions for consideration and champion their adoption by those governing bodies. Such a bottom-up approach has worked well in some instances, e.g. in the health sector where committed governments and other stakeholders championed the adoption of the WHO Chemicals Road Map, but there has not been a comparative uptake in other areas presumably due to a lower prioritization of chemicals issues there.

Further fragmentation results from policy developments under way that are not closely linked with existing chemicals and waste institutions. For example, plastic pollution is but one of the several unresolved chemicals and waste issues that has recently gained high profile and is being dealt with separately. Other issues with strong links between environment, health, and other sectors include highly hazardous pesticides; antimicrobial resistance, including from pharmaceutical and metal pollution; or electronic waste.

Nevertheless, there is considerable potential to further strengthen and improve coordinated collaboration and cooperation, including among SMCW related MEAs like the BRS Conventions, the Montreal Protocol, and the Minamata Convention. Furthermore, there is much potential for more coherence and mutually supportive action with legal instruments of non-environmental sectors that address chemicals and waste, such as the ILO Conventions, the International Health Regulations, the IMO London Convention on marine pollution, and others.

Moreover, there is a potential for synergies across the numerous partnerships dealing with SMCW-related issues, especially in the agriculture and food; textiles; mining; and water management sectors. These partnerships could benefit from higher visibility and sharing of experience, challenges and best practices for replication and scaling up, as well as for finding new partners and donors or investors. To date, there is no common space that could fulfil these functions.

1.2 Insufficient progress towards the 2020 goal and the SDGs

SAICM was founded in 2006 in light of accelerating growth in the volume and number of chemicals and waste produced, various unresolved and emerging issues, and a persistent lack of capacity in many developing countries. It adopted the overarching goal to, by 2020, minimize significant adverse effects from chemicals throughout their life cycle on human health and the environment.

The 2030 Agenda for Sustainable Development and the SDGs make numerous references to chemicals

⁶ SAICM/IP.2/4 Independent evaluation of the Strategic Approach from 2006-2015: Draft Report.

and waste management; most prominently in SDG 12.4 calling for, by 2020, to “achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment”. SDG areas with relevance for chemicals and waste include urbanization, mobility, construction, health, agriculture, and others. These are all integrated into the 2030 Agenda. However, thus far, many stakeholders have not adequately taken their responsibility to ensure the implementation of SMCW-related SDGs.

In assessing progress towards achieving the 2020 goal, the reports on SAICM implementation for the periods 2011-2013 and 2014-2016 indicate that some progress has been made in terms of hazardous waste management; implementation of chemicals-related multilateral agreements; exchange of knowledge and information; and regional cooperation. However, there was less progress in providing financial support and mainstreaming, and there was a significant variation in progress between countries and regions. Furthermore, the reports showed that at the current rates, efforts would be insufficient to meet the 2020 goal.⁷ The GCO-II corroborates this and finds that the 2020 goal will not be achieved.

A comparable conclusion was drawn in the draft independent evaluation of SAICM for the period from 2006-2015. It indicates that some progress has been made, *inter alia* in areas of information sharing; enabling multi-sector and multi-stakeholder collaboration and awareness; improving capacity through the Quick Start Programme and technical cooperation; as well as in the identification of emerging policy issues. It also points to lessons and areas for improvement, including raising political priority; finance; standards; domestic legislation and capacity for many countries; secretariat capacity; data, indicators and reporting; as well as the need to mobilise broader and more comprehensive sector and stakeholder participation.

The slow pace of progress, seen in contrast with the highly dynamic chemical sector and its strongly growing output, as well as an observable shift in production towards Asia, shows that much more needs to be done to facilitate, enable and support further action at all levels. Since it is apparent that the 2020 goal will not be met, there is urgent need for enhanced action towards a coherent, synergistic and strengthened approach to enable and support significant progress towards realising the 2030 Agenda and the SDGs.

2. A broader chemicals and waste governance dimension

Key to achieving scaled-up action on the ground are governance arrangements that facilitate coherence of policies and coordinated collaborative and cooperative implementation towards the agreed goals by relevant sectors and stakeholders.

Governance arrangements need to be able to keep pace with the chemical sector’s rapid innovation and development. Given the limitations of the current governance landscape, it is suggested that the intent of any changes to achieve the chemicals and waste related SDGs would need to encompass:

1. Raising the profile and priority of an ambitious chemicals and waste agenda to increase commitment;
2. Enhancing strategy and policy coherence and coordination to maximise synergies, efficiency and effectiveness;
3. Strengthening the comprehensiveness of multi-sector and multi-stakeholder engagement, cooperation and action;
4. Mobilizing resources for capacity building to support implementation and institutional strengthening.

⁷ SAICM/OEWG.2/INF/4 Progress in Strategic Approach implementation for 2011-2013; SAICM/OEWG.3/5 Summary report on progress in the implementation of the Strategic Approach for the period 2014-2016 and analysis of the 20 indicators of progress (advance version).

5. Sharing relevant information, lessons and best practices; and
6. Assessing progress to facilitate improvements in policy, systems and coherent accountable implementation.

In order to achieve this set of requirements for SMCW, the governance arrangements need to be comprehensive; flexible; responsive; and complementary across multiple sectors, driven by a shared vision and linked with universal objectives and targets. As part of this effort, it will also be important to strengthen and improve existing instruments and initiatives contributing to the sound management of chemicals and waste.

In the context of current geo-political dynamics, the international community is unlikely to establish sizable new bodies or major legally binding treaties in the near future. This suggests that the best prospect for success would be to build on existing governance arrangements to develop the capability to guide, enable and support complementary, collaborative and cooperative implementation by existing institutions and stakeholders across multiple sectors in a lean and effective manner.

In view of shortfalls of the abovementioned bottom-up approaches to translating decisions at the ICCM into resolutions adopted by IGOs and other relevant governing bodies, an additional more top-down governance dimension seems necessary. This broader governance dimension would complement such bottom-up efforts by articulating agreed common priorities and direction; agreeing on and tracking the implementation of a common strategy; and facilitating and coordinating mutually supportive measures to implement SMCW across all sectors. Whether such more top-down and complementary governance arrangements (e.g. an encompassing platform) are included as one dimension of the SAICM successor framework or as separate governance arrangements is a matter open for debate.

2.1 Key elements

A broader, more top-down, complementary SMCW governance dimension (possibly in the form of an encompassing platform) that facilitates, enables and supports coordinated collaborative and cooperative commitment and action across multiple sectors could encompass the following elements:

1. A clear commitment at the highest possible level to a sound chemicals and waste management agenda that is informed by the best available science and addresses existing needs;
2. Newly developed, or an endorsement of updated existing, overarching vision, goals, targets, and indicators that triggers, guides and brings together commitments from all sectors and stakeholders;
3. Improved multi-sector policy coherence and coordination to maximise the benefits of joint action by multiple stakeholders, including through participatory priority setting and joint program development;
4. Measures to strengthen the capacity to plan, regulate and implement SMCW action across sectors that changes consumer and producer practices and behaviour;
5. Means to disseminate and share experience and lessons from projects and programs, including best practices, and failed or challenging projects and approaches;
6. Enhanced measures for broader coordination and joint planning of intergovernmental organization SMCW programmes within their respective mandates, building on existing arrangements;
7. Appropriate means to incentivise and finance implementation efforts across multiple sectors by stakeholders, for example building on the GEFs approach for cross-focal area projects, but amplifying it to a cross-sectoral level;
8. An enhanced process for agreeing on priorities, responsibilities and tasks that could be undertaken by organisations, stakeholders, instruments and initiatives within their respective mandates, as well as any other governance arrangements or processes to encourage adoption by the relevant governing bodies;

9. An efficient process for reporting and/or collating relevant information on progress, implementation and challenges by all relevant actors, including countries, UN organisations, partnerships, initiatives and other relevant stakeholders, with a view to supporting and enhancing implementation efforts at all levels and enabling the assessment and evaluation process mentioned below; and
10. A follow-up process to assess and evaluate progress, readjust approaches or policies, recommit to the shared vision, goals, objectives and targets; including the possibility of convening in an appropriate form or forum.

2.2 Pathway towards an encompassing governance dimension for SMCW

In the context of the current fragmented chemicals and waste governance landscape, a strong commitment to the SMCW agenda and related SDGs at a level that has the authority to direct system-wide action would legitimise, enable and support its prioritisation and adoption by governments, organisations and stakeholders across multiple sectors. Therefore, a commitment made at the highest possible level is recommended as an initiating step towards broader, encompassing, coherent, complementary and effective SMCW governance.

It is proposed that an initiating resolution be adopted at the highest possible political level, such as the United Nations General Assembly (UNGA), the UN Economic and Social Council (ECOSOC) or the High-level Political Forum on Sustainable Development (HLPF).

a. Ministerial conference and declaration in 2020

The proposed high level initiating resolution could be prepared through an overarching strategic ministerial-level declaration adopted at a high-level segment of ICCM5, or at another high-level conference possibly held back-to-back with ICCM5. The aim would be to invite ministers and other high level actors from multiple sectors to agree on a joint declaration that either:

- Contains the agreed functions and key elements of broader, complementary SMCW governance dimension; or that at the very least
- Provides a mandate for the international community to further elaborate the broader SMCW governance dimension and finalize its design by 2021 or 2022.

In order to make as much progress as possible by October 2020, a group or alliance of interested countries could advance the debate on the broader SMCW governance dimension. Its members could engage in discussions of the possible institutional arrangements for e.g. an encompassing platform. They could also, possibly through the intersessional process, address the division of labour between the various dimensions of SMCW. These include the voluntary multi-sector, multi-stakeholder partnership and implementing dimension; the science/policy interface dimension; and the mobilising finance, technology and capacity building support dimension of a follow-up SAICM 2.0 on the one hand, and a broader, more top-down, complementary SMCW governance dimension on the other.

b. Possible process for a resolution at the highest possible level in 2021/2022

As outlined above, a commitment made at the highest possible level is recommended as an initiating step towards broader, encompassing and complementary SMCW governance. It is proposed that this high level initiating resolution be prepared by adopting a Ministerial Declaration at either a High Level Segment of ICCM5 or another multi-sector Ministerial Conference.

This Ministerial declaration could be introduced for endorsement and mandate by any country or group of countries to a selected body at the highest possible political level, such as UNGA or the ECOSOC or the HLPF.

Such a resolution for a broader platform taken at the highest possible political level would contribute to mainstreaming the agenda across the entire chemicals and waste governance landscape. By enhancing cross-sector synergies and coherence, as well as fostering system-wide coordinated

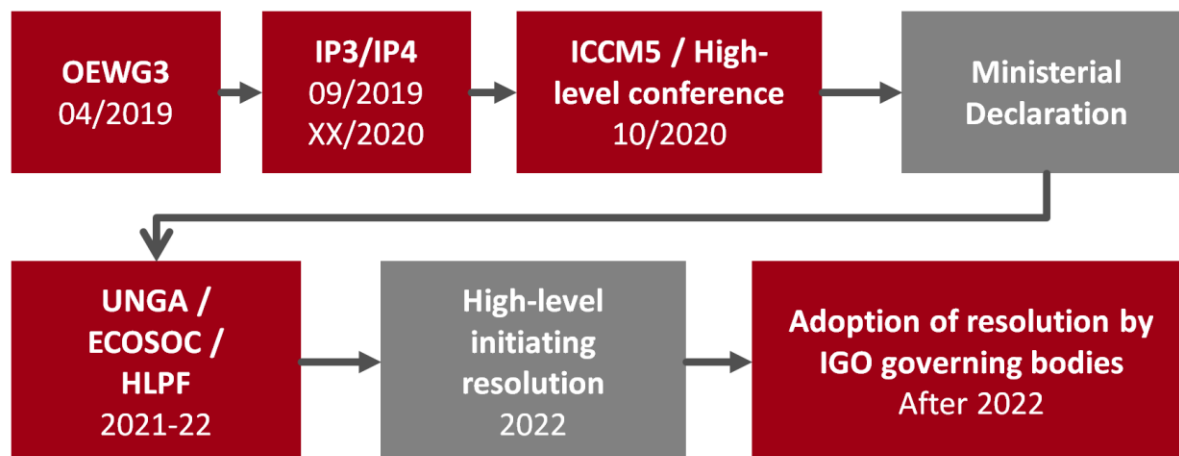
collaboration, it offers opportunities to reduce transaction costs. This has the advantage of increasing the profile, political priority and ownership of the SMCW agenda. It would maximise leverage for ambitious cross-sector and multi-stakeholder domestic action and accountable reporting, assessment and evaluation. Moreover, it enables agreement on strong coherent guidance among other UN bodies, including the specialised UN agencies such as WHO, FAO, UNEP, ILO, IMO and others. It can also create momentum that guides chemicals or waste related bodies or organisations from outside the UN system (such as OECD, Bretton Woods Institutions), as well as partnerships, initiatives, private sector and civil society organisations operating independently of SAICM.

The proposed high-level initiating resolution might therefore include:

1. The elements of broader, encompassing and complementary SMCW governance and other aspects, as agreed upon in the ministerial declaration, and ideally endorsed by further stakeholders from all relevant sectors;
2. A request to the governing bodies of IGOs, MEAs and initiatives within the UN system to fully participate in the broader governance arrangement and commit to its goal and purpose, within their respective mandates.
3. A call for multi-sector governmental participation and an invitation for multi-stakeholder participation.

Once the consideration of the overarching governance platform for SMCW has been finalised, a further step to ensure commitment and engagement by relevant sectors and stakeholders would be for the MEAs and other legal instruments, as well as the IGOs, to adopt the final agreement (i.e. the high-level initiating resolution) within their respective governing bodies for inclusion in their programmes of work.

c. Possible timeline



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**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4 of the provisional agenda*

**Progress towards the achievement of the 2020
overall objective of the sound management of
chemicals**

**Submission of the International Council of Chemical
Associations (ICCA) and the United Nations Environment
Programme (UNEP): Knowledge Management and
Information Sharing for the Sound Management of Industrial
Chemicals**

Note by the secretariat

1. The secretariat has the honour to circulate, in the annex to the present note, a report received from the International Council of Chemical Associations (ICCA) and the United Nations Environment Programme (UNEP) on Knowledge Management and Information Sharing for the Sound Management of Industrial Chemicals.
2. The annexed report aims to improve the understanding of the number of chemicals in commerce; to inventory and review publicly available environmental, health and safety (EHS) sources on industrial chemicals at national, regional and global levels; to review the scope, applicability and accessibility of the EHS information provided by each source; to establish criteria for quality and review each source of information according to those criteria; and to compare to the extent possible, the availability of information at the launch of Strategic Approach to International Chemicals Management (SAICM) in 2006, with information available today, to demonstrate the progress made since SAICM began.
3. The draft outline of the report was provided to SAICM stakeholders in May-June 2018 for comment and input. Stakeholders were also consulted on the first full draft of the report between 4 December 2018 to 7 February 2019. Any final comments to the attached report are invited by 15 April 2019.
4. The report is presented in the annex as received from the ICCA and UNEP and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex



Knowledge Management and Information Sharing for the Sound Management of Industrial Chemicals

**UN Environment
and
the International Council of Chemical Associations**

Disclaimer

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme or of the International Council of Chemical Associations, nor does citing of trade names or commercial processes constitute endorsement.

Acknowledgements

Review and comments were solicited from all SAICM stakeholders on the outline of the report and comments were gratefully received from IPEN, UNITAR, WHO, and representatives from the national governments of Canada, Germany, Iraq, Columbia, Russia, Mexico, Mauritius and the Republic of Congo. Feedback was also solicited from all SAICM stakeholders on a draft of the final report and comments were gratefully received from OECD, Crop Life International, IPEN, and representatives from the national governments of Madagascar and Tanzania.

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Executive Summary

INDUSTRIAL CHEMICALS IN COMMERCE KEY FACTS

- There are an estimated 40,000 to 60,000 industrial chemicals in commerce globally.
- An estimated 6,000 of them account for more than 99% of the total volume of industrial chemicals in commerce globally.
- A number of factors contribute to the uncertainty in the estimates of the numbers of chemicals, including:
 - a lack of chemical inventories for many countries in the world;
 - uncertain and variable definitions of industrial chemicals in commerce (i.e., different scopes);
 - varying volume thresholds for reporting;
 - uncertainty as to whether or not listed chemicals are actually on the market; and
 - lack of reporting or misreporting to government authorities.
- There are EHS data existing to support varying degrees of screening level hazard and risk assessment for the majority of the highest production volume chemicals and while knowledge gaps still exist for many lower volume chemicals, they are rapidly being addressed by:
 - Recently adopted legislation and regulations (e.g., EU REACH, K-REACH, China-REACH, etc.);
 - market forces (e.g., demand for “Green Chemistry”); and
 - newly developing predictive hazard identification tools (e.g., computational toxicology) that are quicker and more resource efficient.
- There is a need for more and better chemical hazard, use and exposure information, particularly from developing countries, to improve hazard and risk assessment and risk management.
- This report identifies more than 100 publicly available EHS information sources, spanning nearly 50 countries spread across 4 continents. The report provides profiles of 41 of the largest and most comprehensive of them:
 - 7 are portals which provide easy access to multiple, third-party owned databases;
 - 10 provide access to EHS-type regulatory decisions, but not to any specific EHS data per se;
 - the remaining 24 represent primary EHS information sources:
 - 7 of them are managed by inter-governmental organizations, 14 by regional or national governments and 3 by NGO’s;
 - the largest and most comprehensive databases were launched after SAICM was adopted in 2006;
 - ECHA’S CHEM is the largest and most comprehensive with hazard, use, exposure, risk and risk management information for the 21,000 plus chemicals produced or imported into the EU;
 - the majority of sources include EHS information on a broader group of chemicals found in the environment, regardless of whether they remain in commerce;
 - several are designed to assist those who are looking to substitute less hazardous chemicals for more hazardous ones and four of them increase transparency of the identity and hazard characteristics of chemicals used in specific categories of consumer products.

Chemistry provides benefits to society and is critical to solving some of humanity's greatest challenges. Yet it must be practiced responsibly to minimize adverse effects on human health and the environment. Adopted by the First International Conference on Chemicals Management (ICCM1) on 6 February 2006 in Dubai, the Strategic Approach to International Chemicals Management (SAICM) is a policy framework to promote chemical safety around the world and provide a high-level international forum for multi-stakeholder and multi-sectoral discussion and exchange of experience on chemicals management issues.

SAICM supports achievement of the 2020 goal agreed to at the 2002 Johannesburg World Summit on Sustainable Development. The overall objective is the achievement of the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health.

Knowledge and information sharing are critical components of the SAICM goal. Since the inception of SAICM, there have been advances in the availability and quality of chemical safety information. However, information gaps remain and there is a large discrepancy in the understanding of the number of chemicals in commerce amongst the various stakeholders. There is a need to draw upon experiences from various regulatory approaches that exist across the globe to have a better understanding and collective overview. The current analysis was undertaken to provide information on where to find environmental, health and safety (EHS) information.

This study helps by providing an inventory of the available databases of industrial chemicals in commerce that include EHS information. It identifies general issues that may present barriers to gaining the type of clarity that stakeholders seek on these questions and defines, as appropriate, areas where more EHS information is required.

This report has been written primarily to serve the needs of those who are seeking to find EHS and regulatory information on industrial chemicals and aspires to be a helpful guide for locating and using publicly available information sources.

Furthermore, the study provides instrumental information to inform the Global Chemicals Outlook-II which was launched at the Fourth Session of the UN Environment Assembly (UNEA-4)¹.

The description and information on the scope, strengths, and limitations of each database will inform policy makers on how such databases on chemicals have been developed and how they are fit for purpose, which can support further developments in chemicals management policies at the national and global level. It will assist:

- authorities in developing countries gain ready access to EHS information on a wide range of industrial chemicals in commerce for use in GHS implementation;
- as well as help them to develop strategies for gathering local use and exposure information critical for conducting risk assessments and prioritizing chemicals for further risk management;
- those who wish to pursue more complete EHS data sets to know where to find the most comprehensive information that is available and to identify remaining data for prioritized action to close them.

¹ SAICM/OEWG.3/INF/3

This study provides policy-makers with sources of EHS information to assist their discussions on specific chemicals and chemical classes identified as concerns to SAICM (e.g., brominated flame retardants, perfluorinated chemicals, and others).

This report identifies the challenges to enumerating the numbers of industrial chemicals in commerce which include: a lack of chemical inventories for many countries in the world, uncertain and variable definitions of what's included under the rubrics of chemicals and even "Industrial Chemicals", varying volume thresholds for reporting, uncertainty as to whether chemicals initially notified to various governments still remain on the market, whether new chemicals notified since then were even ever brought to the market, duplicates, chemical identity being claimed as CBI, and unintended incentives for companies to over-report.

Considering recent initiatives in the United States of America (US) and in the European Union (EU) that focus on quantifying the actual numbers of chemicals active on their markets, as well as estimates from Canada, Japan and China, and making varying assumptions about the overlap of chemicals produced and used across them and the rest of the world, yield an estimate likely in the range of 40,000-60,000 chemicals in commerce globally. It is further estimated that about 6000 of those chemicals account for more than 99% of the total volume produced and marketed.

The report identifies more than 100 individual databases containing EHS and/or EHS-type regulatory information on industrial chemicals in commerce. They include databases developed and maintained by inter-governmental organizations, regional groups, national governments and NGOs.

Forty-one of the largest and most comprehensive of those databases have been individually profiled and objectively evaluated against pre-determined quality criteria, including: the scope of chemicals addressed, ease of access and use, breadth and depth of EHS information available, quality of the underlying information and procedures to keep them current with new information.

The scopes of the databases vary markedly. Fifteen of them are restricted to industrial chemicals currently in commerce, with clearly articulated exemptions. The remaining 26 have broader scopes and include polymers, pesticides, by-products and/or obsolete chemicals.

All of the databases were found to be easily accessed and used, although some sources provide published user guides to more easily facilitate basic and advanced searches.

The breadth and depth of EHS information varies considerably, ranging from simple chemical identity and basic regulatory decisions to more detailed mammalian and environmental hazard, exposure and risk assessments.

The quality of the underlying EHS information also varies somewhat, but was generally considered to be good when judged against the pre-established criteria. Most governmental organizations provide for some type of peer review and solicit and incorporate public comment on their work, whereas the NGO databases and the ICCA GPS Portal, did not include an external peer review process.

About half of the owners of the databases provide adequate descriptions of their procedures for keeping the information up to date. Some of the databases are intentionally static, with no intent to update the information they contain, and so users need to exercise caution when referencing information that is available from them.

Each of the databases was classified in the Study into one of three distinct categories: (1) information portals that provide users the ability to simultaneously search multiple, third party owned and managed EHS databases; (2) single, primary sources which provide access to EHS information on chemical substances; and (3) single, primary sources which provide access to EHS-type regulatory decisions made about chemical substances.

(1) The seven portals reviewed provide users with the capability of searching many disparate individual EHS information sources (collectively more than 100) simultaneously, thereby increasing global reach, scale and efficiency. Such portals represent a helpful starting point for those who need a quick overview of the information that might be available on a particular chemical substance. However, users must be cautious with interpreting and applying the output of their searches from these portals and must first consult the websites of the individual third-party sources to fully understand the strengths and limitations of the underlying information.

(2) Twenty-four single, primary sources of EHS information were reviewed. With a few exceptions, most of them are from inter-governmental organizations or individual government agencies which have regulatory authority within their jurisdictions. Three of them are from NGOs, and one is from a US government, non-regulatory agency. About half of them pre-date the inception of SAICM in 2006; however, the largest and most comprehensive of these databases were developed post-SAICM.

Of those 24 databases, ECHA's CHEM, which provides EHS information on the 21,500 plus chemicals registered to meet EU REACH obligations, is the most comprehensive and should be among the first searched by users who seek both mammalian and environmental hazard, use, exposure, risk assessment and risk management information. It can be accessed directly or via several of the portals discussed above. Substantial hazard, use/exposure and risk information is available for chemicals that are produced or imported at or above 1000 metric tonnes/year, somewhat less so for lower volume substances, and substances below 10 metric tonnes/year have reduced information requirements. Even so, ECHA requires and makes publicly available an assessment of the risks of exposure for a full range of uses and exposure scenarios.

EPA's ACToR database is unique and distinct among the 24 because it is focused on helping users predict toxicity of a chemical substance that currently lacks mammalian and eco-toxicity data. It does so by making inferences from chemicals that have been well-studied to other, structurally similar classes of chemicals. Databases such as ACToR, and the suite of new tools and methods available from them, may gain increasing use in the next few years and offer promise for closing remaining information gaps.

Some of the databases reviewed have been developed for the express purpose of promoting safer alternatives to existing chemicals considered as risky for consumer exposures. Furthermore, at least four of them (EWG's Skin-Deep, GoodGuide, National Library of Medicine's Household Products database (accessible from TOXNET) and California DTSC) place their focus on increasing transparency of the identity and hazard characteristics of chemicals used in specific consumer products, thereby directly addressing the SAICM emerging policy issue of Chemicals in Products.

(3) The final category of EHS information sources reviewed includes ten databases that provide EHS-type regulatory decisions on specific chemicals. They do not provide users with EHS information per se, but instead provide key decisions that, when combined with knowledge of the regulatory criteria used to make those decisions, give users insight as to how other governments view those chemicals and are taking regulatory actions to further investigate and manage the risks they pose to human health and/or

the environment. Of those ten, Canada's Categorization Results database (Table 3 and Appendix B5) may be relevant for many users because it presents regulatory decisions on all 23,000 plus chemical substances identified as being in commerce in Canada. Many governments around the world continue to struggle with characterizing the hazard and risks of chemicals and the results of Canada's efforts possibly can be leveraged by them for their own purposes.

Strengths of the study include providing an estimation of the number of 'chemicals in commerce', its focus on industrial chemicals which has seen an increasing concern from the public; the comprehensiveness of the inventory of publicly accessible EHS databases assembled (i.e. breadth of geographic coverage, and type of EHS information); the objective assessment of the quality of those databases, and the reports' orientation toward helping information seekers navigate the complex data landscape to optimize their efforts.

This study and the databases themselves are not without their limitations and they have been identified and thoroughly discussed in the report. Some knowledge gaps exist in the breadth, depth and the quality of the EHS information and characteristics of individual chemicals in commerce likely exist. This study makes recommendations on some of these knowledge gaps for future studies (see chapter 6). The Confidential Business Information claims for some chemicals can limit the information available to the general public. A lack of information on uses and exposures to chemicals in developing countries is especially challenging. The overwhelming majority of EHS information sources identified derive from countries with developed chemical control regulatory schemes. The hazard information available from these databases is relevant and can be leveraged for application by developing countries (i.e., hazard properties are intrinsic to the substances). The presence of comprehensive EHS information for industrial chemicals in commerce can help the developing countries with their capacity-building efforts so as to strengthen their national regulations and safety management practices.

Nevertheless, there are several reasons to be optimistic that going forward information gaps can be closed at an accelerated rate. The combined effect of recently adopted legislation in multiple regions and countries (e.g., EU, US, Korea and China) that requires manufacturers and importers to collect and publicly report hazard, use, exposure and risk information on their chemicals; the increasing focus on safe substitution and greener chemistry; as well as the advent and acceptance of new tools and methods (e.g. read across, computational toxicology) provide excellent opportunities to close such information gaps more rapidly than in the past.

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Table B1 — REACH Standard Information Requirements

Abbreviations and Acronyms

ACC — American Chemistry Council
ACE — Assessment of Chemical Exposures program (US ATSDR)
ACToR — Aggregated Computational Toxicology Resource
AC50 — chemical concentration producing 50% of the maximum activity in a particular assay
AICS — Australian Inventory of Chemical Substances
AJCSD — Asean-Japan Chemical Safety Database
AQSIQ — General Administration of Quality Supervision, Inspection and Quarantine (China)
ATSDR — US Agency for Toxic Substances & Disease Registry
BIAC — Business and Industry Advisory Committee to OECD
CAAC — Chemical Assessment Advisory Committee (USEPA)
CalEPA — California Environmental Protection Agency
CAS — Chemical Abstract Service Registry
CBI — Confidential Business Information
CCA — Chemical Control Act (South Korea)
CCID — Chemical Classification and Information Database (New Zealand)
CCOHS — Canadian Centre for Occupational Health and Safety
CCR — Categorization Results from the Canadian Domestic Substance List
CCRIS — Chemical Carcinogenesis Research Information System (TOXNET)
CDC — US Centers for Disease Control and Prevention (CDC)
CEBS — Chemical Effects in Biological Systems
CEFIC — European Chemical Industry Council
CEPA — Canadian Environmental Protection Act
CERCLA — US Comprehensive Environmental Response, Compensation, and Liabilities Act or Superfund" law
CHRIP® — CHemical Risk Information Platform (Japan)
CICADS — Concise International Chemical Assessment Documents

CIR — Cosmetic Ingredient Review
CIT — Chemical Information Tool
CLP — Classification, Labelling and Packaging (EU)
CMC — Japan Chemicals Management Center
CMP — Chemical Management Plan (Canada)
CMR — Carcinogen, Mutagen or Toxic to Reproduction
COC — Chemical of Concern (COC)
CoCAM — Cooperative Chemicals Assessment Meeting
COPHES - Consortium to Perform Human Biomonitoring on a European Scale
CPCAT — Chemical Product Category
CPDP — Carcinogenic Potency Database (TOXNET)
CSA — Chemical Safety Assessments (EU REACH)
CSCL — Chemical Substances Control Law (Japan)
CSEM — Case Study in Environmental Medicine (ATSDR)
CTD — Comparative Toxicogenomics Database (TOXNET)
DART — Developmental and Reproductive Toxicology (TOXNET)
DEMOCOPHES — DEMONstration of a study to COordinate and Perform Human Biomonitoring on a European Scale
DOD — Department of Defense (US)
DSL — Canadian Domestic Substances List
DTSC — Department of Toxic Substances Control (California)
ECHA — European Chemicals Agency
EC — European Commission or less often European Community
ECOTOX — Eco-toxicity
EEU — Eurasian Economic Union
EHS — Environment, Health and Safety
EHC — Environmental Health Criteria Monographs

EINECS — European Inventory of Existing Commercial Substances	IUR — Inhalation Unit Risk
EPA — Environmental Protection Agency	J-CHECK — Japan's Chemicals Collaborative Knowledge Database
EWG — Environmental Working Group	JECDB — Japan Existing Chemicals Database
EU — European Union	JECFA — Joint Expert Committee on Food Additives
FAO — Food and Agriculture Organization of the United Nations	JMPR — Joint Meeting on Pesticide Residues
FDA — Food and Drug Administration	K-PBR — Korea Consumer Chemical Products and Biocides Safety Act
GCO — Global Chemical Outlook	KCMA — Korea Chemical Management Association
GENE-TOX — Genetic Toxicology (TOXNET)	KE — Korea Existing chemicals numbers
GHS — Globally Harmonized System of Classification and Labelling of Chemicals	KECI — Korea Existing Chemicals Registry
GLP — Good Laboratory Practices	KECL — Korea Existing Chemicals List
GPS — Global Product Strategy (ICCA)	KEMI — Swedish Chemicals Agency
GREM — Grand Rounds in Environmental Medicine (US ATSDR)	K-REACH — South Korea's Act on Registration, Evaluation, Authorization of Chemicals
HazChem — Hazardous Chemicals (China)	LOAEL — Lowest Observable Adverse Exposure Level
HPV — High Production Volume Chemicals Program	MEE — Ministry of Ecology and Environment (China)
HSDB — Hazardous Substances Data Bank (TOXNET)	METI — Japan Ministry of Economy, Trade and Industry
HSGs — Health and Safety Guides	MHLW — Japan Ministry of Health, Labor and Welfare
HSNO — Hazardous Substances and New Organisms Act (New Zealand)	MHMIs — Managing Hazardous Materials Incidents (US ATSDR)
IARC — International Agency for Research on Cancer	MMGs — Medical Management Guidelines (US ATSDR)
ICCA — International Council of Chemical Associations	MNM — Manufactured NanoMaterial
ICCM — International Conference on Chemicals Management (UN Environment)	MOE — Ministry of the Environment (Japan, South Korea)
ICSC — International Chemical Safety Cards	MOL — Ministry of Labor (South Korea)
IECSC — Inventory of Existing Chemical Substances in China	MPS — Ministry of Public Security (MPS)
IFCS — Intergovernmental Forum on Chemical Safety	MRLs — Minimal Risk Levels (US ATSDR)
ILO — International Labor Organization	MSDS — Material Safety Data Sheet
IMAP — Inventory Multi-tiered Assessment and Prioritization (Australia)	NAS — US National Academy of Sciences
INCI — International Nomenclature for Cosmetic Ingredients	NCEA — National Center for Environmental Assessment (US)
InChI — IUPAC International Chemical Identifier	NCEH — National Center for Environmental Health (US)
IPCS — International Programme on Chemical Safety	NCELs — New Chemical Exposure Limits
IRIS — Integrated Risk Information System	NCIS — National Chemical Information System (South Korea)
ITER — International Toxicology Estimates for Risk (TOXNET)	NEG — Nordic Expert Group
IUPAC — International Union of Pure and Applied Chemistry	NF — National Formulary
	NGO — Non-Governmental Organizations

NICNAS — National Industrial Chemicals Notification and Assessment Scheme (Australia)
NIER — National Institute for Environmental Research (South Korea)
NIH — US National Institutes of Health
NITE — Japan National Institute of Technology and Evaluation
NOAA — National Oceanographic and Atmospheric Association
NOAEL — No Observable Adverse Exposure Level
NONS — Notified under the EU Dangerous Substances Directive
NRC — National Research Council (NRC)
NRCC — National Registration Center of Chemicals (China)
NZEPA — New Zealand Environmental Protection Authority
NZIoC — New Zealand Inventory of Chemicals
OctaDBE — Octadibromodiphenyl ether
OEL — Occupational Exposure Limits
OECD — Organization for Economic Cooperation and Development
OR — Only-Representative (EU REACH)
ORD — Office of Research and Development (USEPA)
OSF — Oral Slope Factor
OSHA — Occupational Safety and Health Act or Administration (US and South Korea)
P2 — Pollution Prevention
PBT — Persistent, Bioaccumulative and Toxic
PCB — PolyChlorinated Biphenyls
PECs — Priority Existing Chemicals (Australia)
PEHT — Pediatric Environmental Health Toolkit (US ATSDR)
PETA — People for the Ethical Treatment of Animals
PIM — Poisons Information Monographs
PMN — Pre-Manufacture Notification (USEPA)
POPs — Persistent Organic Pollutants
POW — Octanol-Water Partition Co-efficient
PSL — Canadian Priority Substances List
QA/QC — Quality Assurance/Quality Control
QSR — Quantitative Structure Activity Relationships
RfC — Reference concentration
RfCAn — Reference concentration, including sensitive sub-groups

RfD — Reference dose
REACH — Registration Evaluation, Authorization and Restriction of CHemicals (EU, China and South Korea)
R&D — Research and Development
SAB — Science Advisory Board (USEPA)
SARA — Superfund Amendments and Reauthorization Act of 1986
SAWS — State Administration for Work Safety (China)
SCC — Solid Waste and Chemical Management Center (China)
SCP — California's Safer Consumer Protection law
SDS — Safety Data Sheet
SIDS — Screening Information Data Set
SIN — ChemSec's Substitute it Now list
SAICM — Strategic Approach to International Chemicals Management
SMEs — Small and Medium Sized Enterprises
SMILES — Simplified Molecular Input Line Entry System
SNUN — Significant New Use Notice (USEPA)
SNUR — Significant New Use Rule (USEPA)
SRS — Substance Registry Services (USEPA)
SU — Sector End Use
SVHC — Substances of Very High Concern (EU REACH)
SWEA — Swedish Work Environment Authority
SWG — Swedish Criteria Group
SWI — Safe Work Instrument (New Zealand)
TCCA — Toxic Chemicals Control Act (South Korea)
TIC — Toxics Information Clearinghouse
ToxFAQs™ — Toxicological Frequently Asked Question documents (US ATSDR)
TOXNET — TOXicology Data NETwork
ToxProfiles™ — Toxicological Profiles (US ATSDR)
TRI — Toxics Release Inventory (USEPA)
TSCA — Toxic Substances Control Act
TSN — Taxonomic Serial Number
UKPID — UK Poison Information Documents
UNCED — United Nations Conference on Environment and Development
UNIDO — United Nations Industrial Development Organization
UN — United Nations

UPC — Universal Product Codes

US — United States of America

USDA — United States Department of
Agriculture

USGS — United States Geological Survey

USP — United States Pharmacopeia

UVCB — (chemical of) Unknown or Variable
Composition, complex reaction products or
Biological material

vPvB — very Persistent, very Bioaccumulative

WHO — World Health Organization

WSSD — World Summit on Sustainable
Development

1. Background, Aims and Scope

Working collaboratively with other partners, ICCA, UN Environment and SAICM are jointly committed to the goal established in 2002 at the Johannesburg World Summit on Sustainable Development (WSSD) that, by the year 2020, chemicals should be “used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.” Guiding this journey is the Strategic Approach to International Chemicals Management (SAICM), a policy framework that calls on the most advanced countries and other stakeholders to step up and share their knowledge and expertise with developing countries and countries with economies in transition to help promote chemical safety around the world. The Global Chemical Outlook (GCO-II) and the Independent Evaluation of the Strategic Approach from 2006-2015 remarked that the 2020 goal will not be reached^{2, 3, 4}, given the extent and pace of progress made so far and considering the limited remaining time in run-up to 2020.

Knowledge and information sharing along the life-cycle and to all stakeholders are critical components of the SAICM goal. The study reported herein provides an important contribution to improve the collective understanding of the number and nature of chemicals in commerce and the availability of environmental, health and safety (EHS) information for those chemicals. Since the inception of SAICM in 2006, there have been advances in the availability and quality of chemical safety information. However, information gaps remain and there is a large discrepancy in the understanding of the number of chemicals in commerce amongst the various stakeholders. There is a need to draw upon experiences from various regulatory approaches that exist across the globe to have a better understanding and collective overview. This analysis should provide guidance to all stakeholders, particularly in developing countries on where to find which kind of EHS information.

EHS information — For the purposes of this study, environmental, health and safety information include all data and knowledge which are available to identify and assess chemical hazards and risks and to make risk management decisions.

This study investigated the publicly available EHS information on industrial chemicals, i.e. chemicals produced and used in a wide range of applications, with a few exceptions (see chapter 5). Note: this definition was employed principally to estimate the numbers of chemicals in commerce.

“Chemicals in commerce”

For the purposes of this study, the following definition of “chemicals in commerce” is used based on language taken from EU REACH and the US Toxic Substances Control Act (TSCA).

Any organic or inorganic substance of a particular molecular identity, including any combination of these substances occurring in whole or in part as a result of a chemical reaction or occurring in nature, and any element or uncombined radical that has been manufactured or processed above 1 metric tonne per annum, anywhere in the world, during the past ten years.

Therefore, the study aims to:

- Improve the understanding of the number of chemicals in commerce;

² SAICM/OEWG.3/3

³ SAICM/OEWG.3/INF/1

⁴ SAICM/OEWG.3/INF/3

- Inventory and review publicly available EHS information sources on industrial chemicals at national, regional and global levels;
- Review the scope, applicability and accessibility of the EHS information provided by each source;
- Establish criteria for quality and review each source of information according to those criteria (e.g., scope of chemicals addressed; ease of access and use; breadth and depth and quality of the information, etc.) and
- Compare to the extent possible, the availability of information at the launch of SAICM in 2006, with information available today, to demonstrate the progress made since SAICM began.

This study helped inventorying the available data bases of industrial chemicals that include EHS information and identify general issues that may present barriers to gaining the type of clarity that stakeholders seek on these questions and identify, as appropriate, areas where more EHS information is required.

Even though, this study focused on the analysis of EHS information (i.e. scope, breadth, depth and quality) available for the sources which, at a minimum, include the industrial chemicals in commerce as defined by EU REACH and the US Toxic Substances Control Act (TSCA), many of the EHS information sources that have been included in this report cover a much broader scope of chemicals (e.g. banned chemicals or chemicals that are not produced for more than 10 years, safer alternatives to existing chemicals) than industrial chemicals in commerce and this is noted in the accompanying descriptions (see chapter 5). In addition, this study identified multiple databases and initiations that provide information on chemicals in products (see chapter 5).

This study also made the best attempt to identify and discuss the multiple knowledge gaps in EHS information of chemicals in broader context than this current definition in order to facilitate addressing them in the future studies (see chapters 5 and 6).

There are significant concerns expressed about the impacts of chemicals in other sectors, e.g., chemicals used to control pests in agriculture and in and around domiciles, and with chemicals used to control microbial agents in a variety of settings. In fact, the pesticides and antimicrobials receive far greater scrutiny from regulatory agencies and, in general, there exists considerably more EHS information about them compared with industrial chemicals.

2. Methodology

Possibly relevant EHS information sources on chemicals in commerce were identified using the following means:

1. A search of the internet using specific terms: information on chemicals; toxicity information on chemicals, environmental information on chemicals; chemical risk information; and sources of information on chemicals.
2. The results of the search described in Step 1 identified several secondary sources (e.g., portals that provide links to multiple, third party owned and managed databases) which referenced additional potential primary information sources that were then individually investigated to determine if they should be included for analysis.

3. More than 200 SAICM stakeholders were solicited by e-mail asking them to suggest any additional possible EHS information sources not previously identified in Steps 1 and 2 above.

Every attempt was made to identify and include for analysis the major, globally-recognized sources of EHS information; however, not all potential information sources that were identified were included for analysis. Appendix A provides a list of information sources that were suggested for inclusion by some stakeholders but were excluded for analysis. Some only listed chemicals in commerce within a particular jurisdiction yet provided no relevant EHS information on them. Other sources provided information only on chemical substances that were considered out of scope for the study. Such sources were excluded from the analysis. Other sources provided information that was considered redundant with sources already included for analysis and were therefore excluded.

Prior to starting the project, it was anticipated that the various identified EHS information sources would differ with respect to the breadth, depth and quality of EHS information that they make publicly available. Such differences have important implications for the relevance and utility of the source for assessing and managing chemical risks. Therefore, each information source was scrutinized against the five quality criteria described below.

No effort was made to rate or rank the respective information sources on these criteria. Rather instead, the characteristics of each source are narratively described using information that was publicly available from the websites maintained by each source. In some instances, the websites lacked necessary details to provide adequate descriptions. Because of time and resource constraints, no effort was made to reach out directly to the owners of the databases to request additional details.

Quality Criteria:

1. *Scope of Chemicals Addressed — Is the scope clearly described? What type of chemicals are included/excluded? What proportion of the total chemicals of that type that are in commerce are included? What are the gaps? Are there plans to address those gaps in a reasonable time frame and how likely are they to succeed?*
2. *Ease of Access and Use of Chemical Information — How easy is it to find the relevant information? How can the database be searched? Are access and use self-explanatory or are there adequate user instructions available? How might the information be made more easily usable?*
3. *Breadth and Depth of EHS Information Available — What EHS information are available and how are they presented? Do the data span the breadth of health and environmental endpoints of interest or are they more limited? Acute and chronic animal and environmental toxicology? Dose-response data? Mechanistic data? Human epidemiology data? Raw and/or summarized data? Are links provided to the underlying sources of data (e.g., published studies or sponsor submitted studies)? Are hazard assessments included? Are recommended exposure limits available for relevant scenarios? Are intended use, reasonably foreseeable misuse and/or exposure information available? Are exposure scenarios/assessments included? Are completed risk assessments available? What information gaps exist and how might they be addressed in the future?*

4. *Quality of the Underlying EHS Information — Is the source of the underlying data adequately described? How was the literature searched to find all relevant data? What criteria were applied in selecting the studies that were relied upon for the data chosen for inclusion? To what extent has systematic review methodology been applied to conduct hazard assessments? Was there any scoring of the quality of studies relied upon (e.g., Klimisch or other?) How were data generated from OECD test guideline studies conducted according to Good Laboratory Practices (GLP) weighed against data from non-guideline, non GLP studies? How was animal and human evidence integrated to conduct any hazard characterization done? Was any external peer review done? Is there opportunity for external stakeholder input to improve the quality of information?*
5. *Procedures for Updating the Database with New Information — How often and what are the mechanisms used to update the information source with newly generated scientific information? How robust are they? What gaps exist and how might they be addressed in the future?*

During the analysis it was found that each of the EHS information sources could be categorized as to one of three different types:

1. Information portals that provide users the ability to simultaneously search multiple, third-party owned and managed EHS databases;
2. Single, primary sources which provide access to EHS information on chemical substances; and
3. Single, primary sources which provide access to EHS-type regulatory decisions made about chemical substances, but which do not provide any direct EHS information per se.

Separate tables were prepared to summarize the narrative descriptions of each of the three categories of databases.

Another aim of the study was to improve understanding of the number of industrial chemicals in commerce globally. At present, credible estimates are lacking. The starting point for estimates derived for this report were the USEPA TSCA Inventory, EU REACH registrations, Canada's DSL, and the chemical inventories for Japan and China (IECSC). Collectively, these nations/regions account for nearly 75% of annual chemicals sales globally, and greater than 90% of total, annual chemical-related research and development spending.

ECHA's CHEM database was considered to provide the most accurate count for the purpose of this particular report because it excludes polymers, non-isolated intermediates and very low volume substances (i.e., < 1 ton/year) and the time and resources required from companies to register a substance makes it likely that the number of registered substances is close to the actual number of industrial chemicals in regional commerce. By contrast, inventories from the USEPA, Canada, Japan and China include substances that may have been produced or imported at one time, but are no longer active in commerce and thus reliance on them likely leads to an overestimate of the count. Those inventories also include very low volume substances, thus further inflating their counts compared with the EU. Inventories from USEPA, Canada, Japan and China also include polymers and non-isolated intermediates. An effort was made to remove polymers to gain more precise estimates of industrial chemicals. This was relatively straight forward for the USEPA and Japan, but for Canada and China there is no notation about polymer status in their inventories, so polymers were identified as any substance with "poly" in the chemical name. None of the inventories include a designation for non-isolated intermediates, so nothing could be done to remove them from the counts.

Because of the global nature of the industry there is considerable overlap in the identity of chemicals produced and sold. Simply adding the numbers of industrial chemicals listed on individual inventories across nations and regions will produce a gross overestimate of the count of chemicals in commerce. The precise amount of overlap is unknown. To obtain some estimate of the degree of overlap, comparisons were made between Chemical Abstract Service Numbers (CAS#'s) listed on the USEPA TSCA inventory and those listed on ECHA CHEM and Canada's DSL. Note, such comparisons could not be done with the Japan and China inventories due to limitations in searching them, and so assumptions were made about the amount of overlap by extrapolating the findings from the US, Canada and EU.

To address uncertainties, lower bound and upper bound estimates were calculated by making two different sets of assumptions. There is a high degree of confidence that the true number lies somewhere between the lower and upper bounds.

For the upper bound estimate, it was assumed that all listed chemicals on the China and Canada inventories are actually on their markets. This is a very conservative assumption since experience with the recent update to the USEPA TSCA inventory and with EU REACH registrations has shown that many chemicals reported to government agencies have been removed from the market for one reason or another over the years. To compensate for a lack of information about numbers of chemicals from countries in the rest of the world, the estimate was increased by 10% to account for any unique chemicals not otherwise produced or imported in the US, EU, Canada, Japan and China. Once again, this assumption appears conservative given the heavy concentration of research and development spending among those countries/regions compared with elsewhere.

The lower bound estimate was calculated using data solely from the US, EU and Japan and ignoring the Canadian and China inventories because they have not been updated to remove chemicals no longer on the market. To compensate for a lack of information from other countries, the estimate was increased by 5%, a figure deliberately chosen to be less conservative than the 10% figure chosen for making the upper bound estimate.

Finally, the upper and lower bound estimates were rounded off to the nearest thousand to avoid given the impression that they are more precise than is warranted given the underlying assumptions.

3. Observations and Discussion

Appendix B provides detailed profiles and reviews of each of the 41 EHS databases that were selected for analysis and evaluation. For discussion purposes, they have been classified into three distinct categories:

1. information portals that provide users the ability to simultaneously search multiple, third party owned and managed EHS databases;
2. single, primary sources which provide access to EHS information on chemical substances; and
3. single, primary sources which provide access to EHS-type regulatory decisions made about chemical substances.

3.1 *Portals Providing Access to Third Party EHS information Sources*

Seven of the information sources included for evaluation— the OECD eChemPortal, IPCS INCHEM, California DTSC's CIT and TIC, the ICCA GPS Chemical Portal, AJCSD, and TOXNET — are distinctive from the others because they provide only a search engine which directs users to databases owned and maintained by third parties.

Table 1 provides a summary of information about how these portals compare to the quality criteria established for analysis. Also included are web-links to each of the portals.

With the sole exception of the IPCS INCHEM portal, all of them became operational only after the advent of SAICM in 2006 which demonstrates the important role SAICM plays in sharing knowledge and information among stakeholders.

These portals provide users seeking EHS information on chemicals in commerce with the capability of searching many disparate individual sources (collectively >100) simultaneously, thereby increasing global reach, scale and efficiency. Although there are very few shared database sources between the OECD eChemPortal and IPCS INCHEM, a query of IPCS INCHEM of specific substances can be launched from eChemPortal, there is considerable overlap between the two of them combined and the two portals — CIT and TIC — owned and maintained by California's DTSC. There is also overlap between TOXNET and California's CIT and TIC. The AJCSD provides access to databases maintained by Japan and 10 ASEAN countries. Some of the Japanese databases also participate in the eChemPortal. The ICCA's GPS Portal provides access to unique sources of EHS information — from member companies who voluntarily participate.

All seven portals are relatively easy and intuitive to use and offer options for searching on a variety of terms. Published user guidance for conducting searches is available for the OECD eChemPortal, IPCS INCHEM, California DTSC's CIT, AJCSD and TOXNET. The US National Library of Medicine even offers on-line classes for those wishing to learn more about searching TOXNET.

The EHS output from searches conducted with these portals varies considerably depending on what is available from each of the contributing third-party sources. Similarly, the quality of the underlying EHS information available from these sources also differs, and the vigilance with which they are updated with newly available scientific information also varies. Users must be cautious with interpreting and applying the output of their searches from these portals and must first consult the websites of the individual third-party sources to fully understand the strengths and limitations of the underlying information.

The most comprehensive of the third-party information sources that participate through these portals have been individually reviewed in Appendix B of this report and are the subject of discussion in the following sections.

Table 1 — Summary of EHS Information Sources that Operate as Portals to Third-Party Owned and Maintained Databases.

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Number of Third-Party Databases	Ease of Access	Types of Databases
OECD	eChemPortal	2007	Existing chemicals, new industrial chemicals, pesticides and biocides. Unknown number of unique chemicals, but it provides access to 683,634 substance records, 1,136,073 data endpoint records and 33,727 classification records. It also provides 133,910 synonyms in Czech, Danish, Dutch, French, German, Greek, Italian, Japanese, Korean, Portuguese, Slovak, and Spanish.	34. Each database is owned and managed by a separate organization with contributions from the governments of Australia, Canada, the European Union, Finland, France, Germany, Japan, New Zealand, the Nordic countries, United Kingdom and the United States, in addition to several international entities (e.g., OECD itself, Un Environment, World Health Organization and others). Four of the databases contribute data endpoint records: CCR (Categorization Results from the Canadian Domestic Substance List), ECHA CHEM (ECHA's dissemination portal with information on chemicals registered under REACH), J-CHECK (Japan's CHemicals Collaborative Knowledge Database), and OECD SIDS (Existing Screening Information Data Set Database). In addition, two of the databases (ECHA and GHS-J) contribute reviewed GHS classifications: ECHA C&L inventory (Public C&L Inventory according to the EU CLP Regulation (EC) No 1272/2008)) and GHS-J (GHS Classification Results by the Japanese Government).	Allows searches not only by substance name and identification number, but also by classification and chemical property. Users can select specific search criteria for chemical endpoint properties or classifications. Detailed guidance is available for conducting searches, including video tutorials.	Variable. Raw data measuring the properties of chemicals (physical chemical properties, environmental fate and behavior, eco-toxicity, and mammalian toxicology) from a full range of tests and models (e.g., Quantitative Structure Activity Relationships, Computational toxicology methods, etc.) are available, as well as robust summaries of those data, hazard and exposure characterizations and risk assessments. eChemPortal also provides access to national/regional classification results according to national / regional hazard classification schemes or according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). In addition, eChemPortal provides exposure and use information on chemicals.

Table 1 — Summary of EHS Information Sources that Operate as Portals to Third-Party Owned and Maintained Databases.

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Number of Third-Party Databases	Ease of Access	Types of Databases
IPCS	INCHEM	1997. The listed motivation for establishing IPCS INCHEM was UNCED's Agenda 21, Chapter 19 which was adopted in 1992.	Very broad and includes chemicals commonly used throughout the world, which may occur as contaminants in the environment. Thus, it includes: industrial chemicals, biocides, pesticides and other substances.	13. Includes: Concise International Chemical Assessment Documents (CICADS); Environmental Health Criteria (EHC) Monographs; Harmonization Project Publications Health and Safety Guides (HSGs); International Agency for Research on Cancer (IARC) — Summaries and Evaluations; International Chemical Safety Cards (IFCS); IPCS/CEC Evaluation of Antidote Series; Joint Expert Committee on Food Additives (JECFA) — Monographs and Evaluations; Joint Meeting on Pesticide Residues; (JMPR) — Monographs and Evaluations; Kemi-Riskline; Poisons Information Monographs (PIMs); Screening Information Data Sets (SIDS) for High Production Volume Chemicals; UK Poison Information Documents (UKPID)	Searches may be done of all of the participating databases at once or by specifying individual databases. The search tool is quite powerful and flexible using the powerful Verity Query Language to find the information users may be looking for. The Quick Reference Card starts with an overview of searching and moves from simple searches using a single word or phrase to more complicated searches using many search terms. Many examples are available as an aid for users to formulate their own searches. A more in-depth guide is available for those who want to conduct more advanced searches	Variable. Toxicological evaluations. Hazard Assessments, Exposure Assessments and Risk Assessments on specific chemicals. Risk Assessment Methods. Cancer hazard assessments on approximately 1000 chemical and physical agents. Poison antidote and treatment information. Occupational exposure standards Screening Information Datasets.
California DTSC	Chemical Information Tool	2011	Industrial chemicals that are ingredients in consumer products produced or sold in California. Products exempt from SCP include: drugs, medical devices, dental restoratives, food and pesticides. The focus is on ~2300 Candidate Chemicals which by definition exhibit a hazard trait and/or environmental or toxicological endpoint.	56 separate "authoritative sources" accessing chemical toxicity information available on the Web.	Search function by chemical name or Chemical Abstract Service Registration Number (CASRN) Search results shown as links to information in publicly available data collections. The links are displayed by: 1) Hazard traits, toxicological endpoints or physical-chemical parameters; or, 2) Authoritative organizations (governmental entities only). DTSC has published some guidance to assist with searches of CIT	The breadth and depth of EH&S information available varies considerably based on the contributing data source and substance being queried. Hazard traits, toxicological endpoints and physical-chemical parameters are not available for every chemical. The CIT does not store electronic copies of journals, articles, or documents locally. The Search results are displayed by the most recent date of publication as a default.

Table 1 — Summary of EHS Information Sources that Operate as Portals to Third-Party Owned and Maintained Databases.

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Number of Third-Party Databases	Ease of Access	Types of Databases
California DTSC	Toxicology Information Clearinghouse	2011	Industrial chemicals that are ingredients in consumer products produced or sold in California. Products exempt from SCP include: drugs, medical devices, dental restoratives, food and pesticides. The focus is on ~2300 Candidate Chemicals which by definition exhibit a hazard trait and/or environmental or toxicological endpoint.	62. Dynamically searches accessible data collections created and maintained by authoritative organizations, which are state, national, and international governmental entities.	Can be searched by Information Type or by Sources of Information. Information Type Chemical and physical properties Source information, fate and exposure Toxicology, epidemiology and hazard Eco-toxicology, ecology and resource damage Laws, regulations, policies, lists, approaches, tools Sources of Information Governments Private Sector Academic NGOs	The breadth and depth of EH&S information available varies considerably based on the contributing data source and substance being queried. Hazard traits, toxicological endpoints and physical-chemical parameters are not available for every chemical. A search yields a list of third-party information sources and links to their websites which must then be searched individually to locate EHS chemical information.
ICCA	GPS Chemical Portal	2008	Focus is on industrial chemicals in commerce; however, each participating company is free to define the scope of their substances to best meet its own particular needs. Some companies have elected to include the full range of products they manufacture and sell (e.g., pesticides, biocides, polymers, seeds, articles that contain chemicals, etc.), while others have chosen to restrict their scope to industrial chemicals. More than 4500 GPS Safety Summaries are currently available.	Unknown. Users are directed from the Portal to individual company websites. GPS Safety Summaries are only available from companies that voluntarily agree to participate.	It is searchable for substances by: Chemical Name Chemical Abstract Number (CASN) Chemical EINECS (European Inventory of Existing Commercial Substances) Number Brand/Product Name Product Category (39 separate categories) The following terms can be used to narrow a search and return fewer results: Organization/Company Language There is currently no published search guidance available from the GPS Global Chemical Portal website; however, the search process is rather intuitive. ICCA can be contacted directly for assistance if users experience any difficulties with searching the portal.	The format, breadth and depth of EH&S information contained in the GPS Safety Summary varies from company to company, although most often the user will find the following information described: An executive type summary of the information contained in the GPS Safety Summary Manufacturing information, sometimes including production process, capacity and where the product is manufactured A description of the product, including physico-chemical properties Intended uses for the product How the public might be exposed to the product under various scenarios Human health information (e.g., mammalian toxicology and epidemiology) Environmental information (environmental fate and eco-toxicity) Physical hazard information (e.g., reactivity, flammability, etc.) Regulatory information Web links to references, Safety Data Sheets and other relevant information about the product No external peer review is described nor do they discuss soliciting public input.

Table 1 — Summary of EHS Information Sources that Operate as Portals to Third-Party Owned and Maintained Databases.

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Number of Third-Party Databases	Ease of Access	Types of Databases
Asean-Japan	AJCSD	April 2016	Industrial chemicals are the focus; however, users should consult the definition of scope provided by each of the participating countries for clarification.	58 separate databases contributed by 11 different countries: Brunei, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.	There is an English language user's manual available to assist with searches. Searches may be done by CAS#, chemical name or molecular formula.	Names, CAS# and structural formula; Sample SDS; GHS classification results from Japan, Malaysia and Myanmar; hazardous and risk assessment results from Japan. How each country regulates the chemical substance.
US National Library of Medicine	TOXNET	Unknown	Very broad and includes chemicals in commerce, chemical contaminants found in the environment, biological agents, drugs, pesticides, biocides, diseases, genes and proteins.	15 primarily US government databases	Individual databases may be searched one at a time or multiple databases may be searched simultaneously using single or multiple keywords, chemical name or CAS#. There is an abundance of help with search strategies available from the website at https://toxnet.nlm.nih.gov/newtoxnet/toxnetallsearch.html . Can be searched from mobile devices at https://toxnet.nlm.nih.gov/pda/ . Detailed training and guidance are available	May be used to find: Specific chemicals, mixtures, and products, Chemical nomenclature, Chemicals that may be associated with a disease, condition or symptom, Chemicals associated with consumer products, occupations, hobbies, and more, Special toxic effects of chemicals in humans and/or animals, Citations from the scientific literature

3.2 *Primary EHS Information Sources on Chemicals in Commerce*

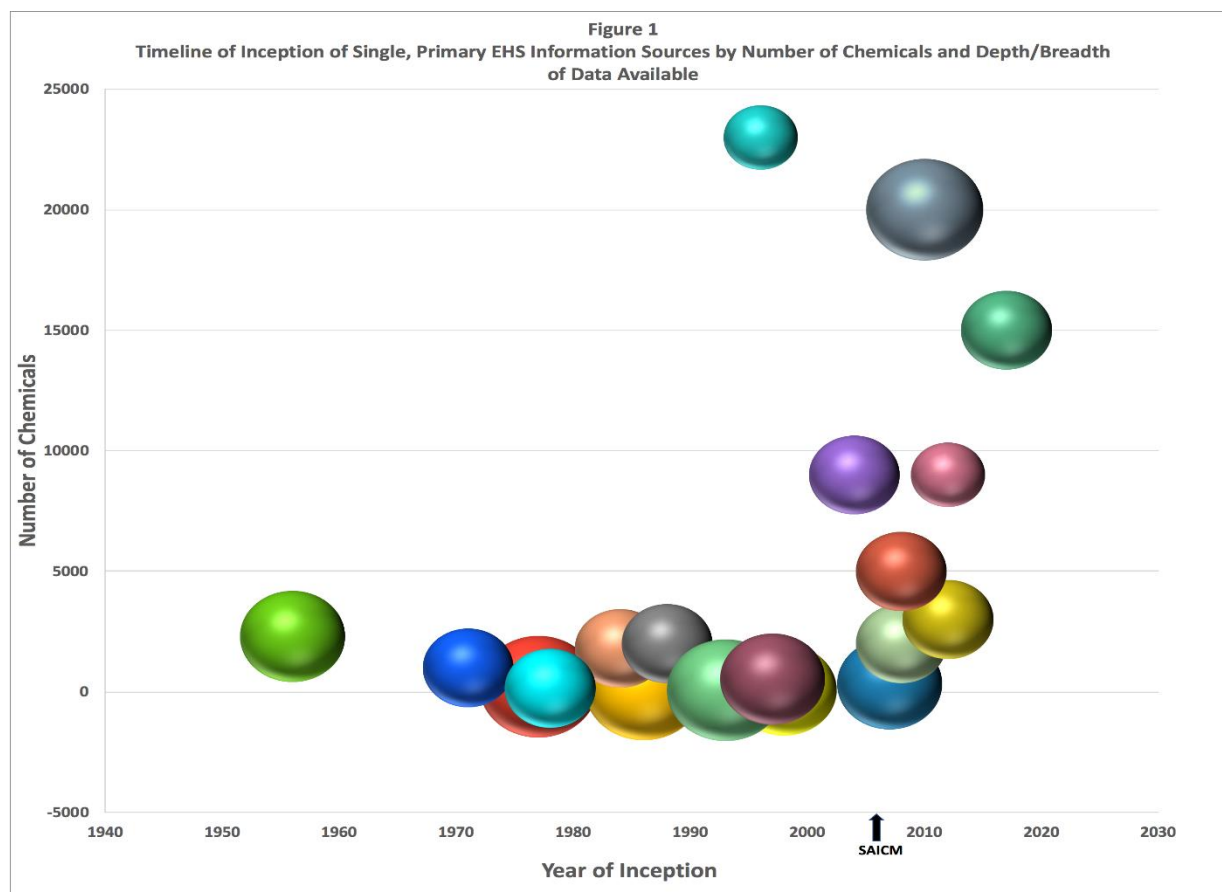
Twenty-four individual primary sources of EHS information on chemicals were identified and included for analysis. Many of them participate as part of and are accessible from one or more of the portals discussed above, but also can be accessed and searched directly from websites hosted by the organizations which developed and maintain them.

Table 2 provides a summary of information about how these primary EHS information sources compare to the quality criteria established for analysis. It also includes Weblinks directly to each them.

With a few exceptions, most of these primary EHS sources are from inter-governmental organizations (WHO, IPCS, IARC, OECD) or individual government agencies which have regulatory authority (ECHA, Canada, Japan NITE, USEPA, Australia, and New Zealand). Three of them are from NGOs (EWG, ChemSec, and GoodGuide), and one is from a US government, non-regulatory agency (ATSDR).

The date of inception could not be determined from the websites for four of the databases (J-CHECK, CHRIP, JECDB, and the ATSDR Toxic Substances Portal). More than half of the others became operational prior to the advent of SAICM in 2006. However, there is good evidence that the pace at which each of them has added new EHS information on substances has accelerated since, first in the early 2000's when the HPV challenge programs were instituted, second after SAICM was established in 2006, and more recently, with increased initiatives on "green" chemistry. The ECHA CHEM, USEPA CHEMVIEW and ACToR, Canadian Screening Level Assessments, Australia IMAP, EWG Skin-Deep, ChemSec SIN List and GoodGuide databases were clearly established during the post SAICM era.

Figure 1 displays the timeline of inception of single, primary EHS information sources by numbers of chemicals covered and by breadth/depth of data available and clearly shows that the largest and most comprehensive were assembled after SAICM was adopted in 2006.



Footnote to Figure 1: Each sphere represents one of the 19 single, primary sources of EHS information for which a date of inception could be confidently determined from publicly available information (see Table 2). There is no significance to the color of the spheres, the sole intention of which is to distinguish one data source from another. The size of each sphere is dictated by the relative depth/breadth of EHS information available from each source. Each source was rated on a scale of 1-5 with 1 representing minimal human and/or ecological hazard information available (e.g., raw test data), 5-representing the full suite of hazard, exposure and risk assessment information and the other scores representing the range of information in between. Extensive human health and ecological hazard information, absent any exposure or risk information scored a 3 on the scale.

Since it was one of the qualifying criteria for inclusion, all of the primary EHS information sources at a minimum include industrial chemicals, and they are the primary focus for a little less than half of them (OECD Existing Chemicals, ECHA CHEM, Canada, J-CHECK, CHRIP, JECDB, USEPA databases, and the ChemSec SIN list). The others include a wider range of chemical and/or physical agents, and one (IARC) even includes lifestyle factors. The Australia databases include polymers. The New Zealand databases include pesticides, polymers, and non-infectious organisms.

The ECHA CHEM, J-CHECK, CHRIP, and USEPA CHEMVIEW databases include EHS information on the largest number of chemicals (i.e., tens of thousands) as their owners are government agencies with responsibility and authority to regulate all industrial chemicals produced or imported within their jurisdictions. Persons who seek EHS information on specific chemical substances are likely to find these sources to be the most productive for data mining.

The EWG Skin-Deep and GoodGuide databases also have information on a relatively large number of substances that are contained in personal care and household products. The remainder of primary EHS

sources have information available on a more limited number of substances (ranging from hundreds to as many as several thousand). Although the USEPA's ACToR database provides access to information on over 700,000 chemicals, that information is rather unique as is discussed in further detail below.

Each of the databases is relatively easy to access and search via a number of terms (e.g., CAS#, chemical name or synonyms, etc.), or is otherwise restricted in size so that it can be easily scanned to visually locate the chemical substances of interest. Most of the larger databases include guides or help pages with detailed instructions to assist users with conducting their searches. Some of the more sophisticated databases (e.g., ECHA CHEM) include additional features (e.g., pop-up text boxes) which make navigation even more user-friendly.

The breadth and depth of EHS information available from each source varies considerably. Some sources are focused solely on hazard identification, and do not include any exposure information or risk characterization/assessment. Of this group, some are focused exclusively on human health hazards (IPCS CICADS, IPSC/EC ISCS, WHO HSGs, IARC Monographs, JECFA Monographs, KEMI-Riskline, JECDB and GoodGuide), and one focuses solely on environmental hazards (J-CHECK). Still others (OECD Existing Chemicals Database, EPA IRIS, EWG's Skin-Deep, ChemSec SIN List) include both human and environmental health information, but do not address uses, exposure and/or risk characterization/assessment.

JECFA Monographs/Summary Evaluations and USEPA IRIS both present point of departure estimates (e.g., RfC, etc.), and IPCS CICADS present dose-response information so that others may conduct risk assessments. These values are available collectively for about 3000 of the highest volume substances.

Even among the information sources that provide human health and environmental risk assessment information there is variability in breadth and depth of coverage. Canada presents screening level assessments (Chemicals-at-a-Glance sheets) for more than 300 chemicals and has more detailed risk assessments available for 69 chemicals, with plans to conduct more by 2020. The results of the Screening Level Assessments are written for general audiences rather than for technical experts.

The amount of information available on a given industrial chemical from ECHA CHEM is largely dependent on the volume of that chemical produced or imported to the EU. Substantial hazard, use/exposure and risk information is available for chemicals at or above 1000 metric tonnes, somewhat less so for lower volume substances, and substances below 10 metric tonnes have reduced information requirements. Even so, ECHA requires and makes publicly available an assessment of the risks of exposure for a full range of uses and exposure scenarios.

ATSDR has published toxicological profiles, including risk assessments, for nearly 200 substances. Although it presents some information on environmental fate, the focus is primarily on human health consistent with ATSDR's basic mission.

ECHA CHEM, USEPA CHEMVIEW, ATSDR Toxic Substances Portal, Australia IMAP and the two New Zealand databases present their information in a layered fashion according to the anticipated needs of different types of users. This spans the range from members of the general public, through physicians to technical experts in the fields of toxicology, environmental sciences and risk assessment.

EPA's ACToR is unique and distinct because it is focused on helping users predict toxicity of a chemical substance that currently lacks mammalian and eco-toxicity data. It does so based largely on structural

and other similarities (see Appendix B7 for a fuller discussion) to other chemicals that have been tested. It is not necessarily directed at general EHS information seekers, but instead to chemists and other experts who have specialized knowledge. It has been included for the purposes of this project because of the vast number of chemicals covered in the ACToR database and because the suite of tools available from ACToR are widely expected to gain increasing use in the next few years. Commercial organizations, such as Underwriters Laboratory are also beginning to offer similar tools to assist companies to evaluate existing and new chemicals and others can be expected to follow suit.

As noted above, most of the primary sources of EHS information are government regulatory agencies or inter-governmental organizations. With a few exceptions, these organizations either directly employ, contract with or invite experienced scientific experts who evaluate the available health and environmental evidence and conduct the hazard, exposure and risk characterization/assessments that are made publicly accessible. All of them describe processes they use for peer-review of the information. Some of them (e.g., IARC, JECFA, Canada, USEPA, Australia) have also published detailed technical guidance documents outlining the steps they take to carry out their work.

Many SIDS dossiers for the various HPV Challenge programs were voluntarily prepared by the companies that produce the chemicals. Those dossiers were then reviewed and discussed by government scientists at biannual meetings to agree on hazard conclusions prior to finalizing and publishing them.

To comply with EU REACH, companies that produce or import the chemicals into the EU must come together in Substance Information Exchange Fora, share data and jointly prepare the registration dossiers and Chemical Safety Assessments. Those companies are accountable for the accuracy of the EHS information submitted to ECHA. ECHA and the national authorities have various processes and procedures in place to check on the completeness and quality of the information submitted. They can require companies to conduct additional testing to fill data gaps, submit additional EHS information, re-do safety assessments and implement additional risk management, even including restricting or banning sales of substances that cannot be managed safely. K-REACH and China REACH have similar aspirations, but are still a few years away from full implementation. Their documents are also largely restricted to the local language, with uncertain future plans to also make them available in English.

EWG, ChemSec and GoodGuide rely on internal processes to ensure the quality of the EHS information they publish and none of them describes any external peer-review. GoodGuide invites public feedback and has processes in place to correct errors. Presumably, EWG and ChemSec would also be responsive to public feedback regarding any errors or inaccuracies that are identified, but they do not explicitly describe any processes they have in place to deal with it.

Scientific methods continue to evolve, and many chemicals are subject to ongoing testing and research which makes it a challenge for EHS information sources to maintain current data and perspectives. While acknowledging this challenge, many of the information sources reviewed in this report (e.g., ECHA CHEM, USEPA's CHEMVIEW and IRIS, ATSDR's Toxicology Profiles, Japan's databases, EWG's Skin-Deep, ChemSec's SIN List, Australia IMAP, New Zealand, and GoodGuide) do have well-developed procedures in an effort to stay current. However, others (e.g., IPCS CICADS, IPCS EHCs, WHO HEGs, Canada's risk assessments) completed their work ten or more years ago and no effort is being expended to update the information. Users always need to exercise caution when referencing materials that could be many years out of date.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
IPCS	CICADS	1998	Mostly industrial chemicals.	78	Accessible through searching IPCS INCHEM or directly from the WHO/IPCS website.	Concise documents that provide summaries of the relevant scientific information concerning the potential effects of chemicals upon human health and/or the environment. They are based on selected national or regional evaluation documents or on existing EHCs. The primary objective is characterization of hazard and dose-response from exposure to a chemical. They include only that information considered critical for characterization of the risk posed by the chemical. The critical studies are, however, presented in sufficient detail to support the conclusions drawn. Examples of exposure estimation and risk characterization are provided, whenever possible. These examples cannot be considered as representing all possible exposure situations but are provided as guidance only.	Before acceptance for publication, these documents have undergone extensive peer review by internationally selected experts to ensure their completeness, accuracy in the way in which the original data are represented, and the validity of the conclusions drawn.	While every effort is made to ensure that the documents represent the current status of knowledge, new information is being developed constantly. Unless otherwise stated, the documents are based on a search of the scientific literature to the date shown in the executive summary.	Documents carry dates between 1998 and 2010. Note, nearly all of these documents were authored more than 10 years ago and thus caution should be exercised since it is unlikely that they contain the most up to date scientific information available.
IPCS	EHC	1977	Wide range of chemicals, groups of chemicals, biological and physical agents.	~220 plus another 20+ focused on risk assessment methods.	Accessible through searching IPCS INCHEM or directly from the WHO/IPCS website.	EHC monographs are based on a comprehensive search of available original publications, scientific literature and reviews and examine: the physical and chemical properties and analytical methods; sources of environmental and industrial exposure and environmental transport, chemo-biokinetics and metabolism including absorption, distribution, transformation and elimination; short and long term effects on animals (carcinogenicity, mutagenicity, and teratogenicity); and finally, an evaluation of risks for human health and the effects on the environment.	Before acceptance for publication, these documents have undergone extensive peer review by internationally selected experts to ensure their completeness, accuracy in the way in which the original data are represented, and the validity of the conclusions drawn.	While every effort is made to ensure that the documents represent the current status of knowledge, new information is being developed constantly. Unless otherwise stated, the documents are based on a search of the scientific literature to the date shown in the executive summary.	Documents carry dates between 1977 and 2011. Note, nearly all of these documents were authored more than 10 years ago and thus caution should be exercised since it is unlikely that they contain the most up to date scientific information available.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
WHO	HSGs	1986	Mostly industrial chemicals.	~110	Accessible through searching the IPCS INCHEM website.	Provide concise information in non-technical language, for decision-makers on risks from exposure to chemicals, with practical advice on medical and administrative issues.	Before acceptance for publication, these documents have undergone extensive peer review by internationally selected experts to ensure their completeness, accuracy in the way in which the original data are represented, and the validity of the conclusions drawn.	While every effort is made to ensure that the documents represent the current status of knowledge, new information is being developed constantly. Unless otherwise stated, the documents are based on a search of the scientific literature to the date shown in the executive summary.	Documents carry dates between 1986 and 1999. Note, nearly all of these documents were authored more than 20 years ago and thus caution should be exercised since it is unlikely that they contain the most up to date scientific information available.
IARC	Monographs	1971	Environmental factors including: chemicals, complex mixtures, occupational exposures, physical agents, biological agents, and lifestyle factors.	More than 1000 environmental factors.	Accessible through searching the IPCS INCHEM website or directly via the IARC website.	Provide a classification (i.e., known, probable, possible, not classifiable, probably not) of the strength of evidence that an agent causes human cancer. Seeks to identify cancer hazards, meaning the potential for the exposure to cause cancer. However, it does not indicate the level of risk associated with exposure. The cancer risk associated with substances or agents assigned the same classification may be very different, depending on factors such as the type and extent of exposure and the strength of the effect of the agent.	The evaluation is carried out by a Working Group of independent international experts who consider only evidence already published in the peer review literature. The experts prepare draft documents in advance, based on the available scientific evidence, and subsequently gather for eight days at IARC in Lyon to discuss and finalize their assessment of whether a specific agent causes cancer. They critically review the scientific evidence according to strict criteria, which focus on determining the strength of the available evidence that the agent causes cancer.	IARC works with international experts to identify priorities from among agents suspected of causing cancer, based on the availability of scientific evidence of carcinogenicity and evidence that people may be exposed to the agent. Agents for which substantial new scientific information has become available may be prioritized for re-evaluation.	Ongoing. Monographs carry dates between 1971 and the present.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
IPCS/EC	ICSC	This project began during the 1980s with the objective of developing a product to disseminate the appropriate hazard information on chemicals at the workplace in an understandable and precise way.	Mostly industrial chemicals and some pesticides	~1800	Accessible through searching the IPCS INCHEM website or directly via the ILO website. Searches may be done by: ICSC number, or CAS number Chemical name or synonym Results may be sorted by card no. or chemical name	Identity of the chemical Fire and explosion hazards Acute health hazards Spillage disposal, storage and packaging Preventive measures Firefighting First aid Classification and labelling Physical and chemical properties and dangers Short-term and long-term health effects Regulatory information Environmental data	Draft versions of the card containing a summary of health and safety information are prepared by cooperating scientific institutions. These institutions have the task of collecting and validating the relevant information. The cards are then peer-reviewed by a committee consisting of internationally- recognized experts who take into account advice given by manufacturers, workers' representatives and poisons centers.	Developed to provide online access to the collection of ICSC from a single, continuously-updated source. This permits newly created or amended ICSCs to be made available as soon as they have been validated for publication.	Ongoing. A sampling of documents showed they carry dates from the mid-1990's until the present.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
OECD	Existing Chemicals Database	1988	The scope includes High Production Volume (HPV) chemicals as well as non-HPV, new and existing industrial chemicals. HPV chemicals are defined as all chemicals reported to be produced or imported at levels greater than 1,000 tonnes per year in at least one OECD member country or in the European Union region.	Conclusions and assessment reports have been published for nearly 2000 chemicals.	Accessible through searching the eChemPortal, IPCS IINCHEM or from the OECD website. The database has a comprehensive search facility allowing searches for chemical information based on selected criteria. For example, data on individual chemicals can be searched, or the chemical information can be searched according to whether it has been sponsored (e.g. in the case of HPV chemical), who sponsored it, its SIDS process status, ICCA status, or type of assessment (targeted/non-targeted). Further information on search criteria is included in the "Help" section.	The SIDS content is organized under five headings: Substance Information (including exposure through use patterns), Physical Chemical Properties, Environmental Fate, Environmental Toxicology and Mammalian Toxicology (acute and repeated dose toxicity, in vitro genetic toxicity, conditionally in vivo genetic toxicity, and reproductive/developmental toxicity and any available human epidemiology evidence). Robust study summaries for each entry of the Dossier are prepared.	A Cooperative Chemicals Assessment Meeting (CoCAM) was organized twice a year to discuss draft chemical assessments submitted by sponsors and to agree on hazard conclusions. The hazard conclusions agreed at a CoCAM are endorsed by both the Working Party on Hazard Assessment, the Joint Meeting of the Chemicals Committee and Working Party on Chemicals, Pesticides and Biotechnology consecutively. Summary conclusions were then published in the OECD Existing Chemicals Database. When the hazard assessment (including the assessment report and study summaries) was finalized, it was made available to the public via the Existing Chemicals database.	New information is included in the database only when it has been notified to OECD by Member Countries.	A search of the database finds that many of the published assessments are 15-20 years old, and thus some caution should be exercised since it is unlikely that they all contain the most up to date scientific information available.
Joint WHO/FAO	JECFA Monographs	1956	Food additives, natural toxicants and food contaminants and of residues of veterinary drugs in food	Nearly 1200 JECFA Monographs are available and JECFA Summary Evaluations are available for approximately 2300 chemical substances	Accessible through searching the IPCS INCHEM website or directly via the WHO website. The database is searchable by partial name or CAS number, by first character (letter or symbol), or by functional class.	Provide the toxicological information upon which the JECFA makes its evaluations. Each summary contains basic chemical information, safe exposure levels, links to the most recent reports and monographs as well as to the specification database, and a history of JECFA evaluations.	Prepared by scientific experts and peer reviewed at the JECFA meetings. FAO and WHO initiated a project to update, harmonize and consolidate principles and methods used by JECFA for the risk assessment of food additives, food contaminants, natural toxicants and residues of pesticides and veterinary drugs. The monograph EHC 240: Principles and methods for risk assessment of chemicals in food is the outcome of that project.	JECFA normally meets twice a year with individual agendas covering either (i) food additives, contaminants and naturally occurring toxicants in food or (ii) residues of veterinary drugs in food. To keep abreast in the variety of scientific disciplines necessary for the conduct of up-to-date risk assessments, continuous review and update of the evaluation processes are necessary.	1956-Present.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
Sweden/Nordic	Keml-Riskline	1978	Chemical substances of interest to the Nordic regulatory authorities. The availability of scientific data, recently published criteria documents and ongoing activities at the international level are also considered.	There are approximately 55 documents available; however, some most of them provide evaluations of several chemicals each so the total number of chemicals covered likely exceeds 150.	Accessible through searching IPCS INCHEM or directly from the Swedish Work Authority website.	The documents comprise data on physical and chemical properties, occurrence and use, analytical methods, occupational exposure, toxicokinetics, biological monitoring, and effects in animals and man. Finally, an evaluation of human health risks based on dose-effect/dose-response relationships and the identification of the critical effect(s) is made. No numerical values on OELs are given, as this is done at the national level, according to country-specific procedures. No information on environmental fate and effects is included.	Scientific experts from the Nordic countries (Denmark, Finland, Norway and Sweden) representing different fields of science, such as toxicology, epidemiology and occupational medicine evaluate all relevant published original papers for a substance found in searches in relevant databases. A draft consensus report (or sometimes a more comprehensive criteria document) is written by the secretariat or by a scientist appointed by the secretariat. After discussions, the draft is approved and accepted as a consensus report from the group.	These documents were authored at various points in time during the past 30 years and thus caution should be exercised since it is unlikely that they all contain the most up to date scientific information available. Moreover, this database is no longer being updated.	Ongoing. Documents available carry dates from 1978-2016.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
ECHA	CHEM	2010	Registration is required for all substances manufactured or imported in quantities of one tonne or more per year per manufacturer or importer unless they are exempted from the scope of registration (see Appendix A for a list of exemptions). The registration requirement applies to all substances irrespective of whether they are hazardous or not. This includes substances on their own, in mixtures or substances in articles when they are intended to be released under normal or reasonably foreseeable conditions of use.	As of 20 August 2018, ECHA's database of registered substances contained 21,248 unique substances and information from nearly 90,000 dossiers. The difference between the number of unique substances registered and the number of dossiers is easily explained and is due to the fact that, while REACH requires multiple producers or importers of the same substance to work together to submit a common registration, individual companies must still file their own dossiers.	Accessible by searching OCED's eChemPortal, California's DSTC CIT or TIC databases directly via the ECHA website. Navigating the ECHA database is straightforward, easy and self-explanatory. It can be searched by Chemical Abstract Service (CAS) number, European Community number or name. Scrolling over selected data fields often produces pop-up text boxes which provide fuller explanations and definitions of those fields and possible limitations of the data that may exist.	The breadth and depth of environmental, health and safety information available on each registered substance will vary depending on REACH requirements which are largely dictated by its volume (see Table 1). Different layers of information are available, i.e. ECHA Info Cards (providing one-page summary) as well as disseminated dossiers containing detailed information for each relevant end-point using OECD-harmonized templates. Chemicals Safety Assessments (CSA) address the manufacture of a substance and all the identified uses at all stages of the life cycle of the substance. It compares the potential adverse effects of a substance with the known or reasonably foreseeable exposure of man and/or the environment to that substance considering implemented and recommended risk management measures and operational conditions.	Companies who manufacture/import/use chemicals are accountable for the accuracy of the EHS information submitted to ECHA. ECHA and the national authorities have various processes and procedures in place to check on the completeness and quality of the information submitted. They can require companies to conduct additional testing to fill data gaps, submit additional EHS information, re-do safety assessments and implement additional risk management, up to and including restricting or banning sales of substances that cannot be managed safely.	Registrants have an obligation to keep the information in the registration dossier submitted to ECHA up-to-date. They must consider their registration dossiers as "living documents" and regularly update them whenever new information is available or a need to improve the quality of data is identified. If the registrant becomes aware of information that could lead to other or different risks for human health or the environment caused by the substance they manufacture or import, such as monitoring data in the environment or epidemiological studies, they need to take those data into account and evaluate the appropriateness of the risk management measures put in place or recommended down the supply chain.	Ongoing. Registration dossiers are being added to the database and updated constantly.

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EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
Canada	Screening Level Assessments	Following categorization which was completed in 2006.	Substances used, imported or manufactured in Canada for commercial purposes between January 1, 1984, and December 31, 1986 at a quantity of greater than 100 kilograms per year. It includes discrete organic compounds, inorganic substances, organometallic substances, polymers, and unknown or variable composition complex reaction products or biological material such as acetone or iron. Approximately 4,300 chemical substances that were determined after categorization as warranting further attention	Chemical at a Glance sheets summarizing Screening Level Assessments are available for approximately 330 substances or families of related substances.	This database is not searchable, and the user must scroll down the page to look for the name of their chemical substance of interest. A click on the name of the substance or microorganism produces a fact sheet that is written in layman's language.	Screening level assessments have been done on these substances and the results are summarized in Chemicals-at-a-glance sheets which are a series of short fact sheets about chemical substances and micro-organisms that are being (or have been) assessed in Canada for their possible risks to human health and the environment. generally, provide answers to the following questions: What is it? How is it used? Why is the government of Canada assessing it? How are Canadians exposed to it? What are the results of the assessment? What is the government of Canada doing? What can Canadians do?	The available EHS information and assessment reports have been peer-reviewed by the governmental authorities and/or independent Canadian or international experts.	Chemicals-at-a-glance information sheets are revised, from time to time, as substances move through the various technical and regulatory stages of the risk assessment and risk management processes. Canada describes multiples ways in which it acquires new information that may update prior risk assessments, or which may affect the prioritization of substances for future risk assessments. Such information can come from a variety of sources	Ongoing. Screening Level Assessments and Chemical at a Glance Sheets continue to be completed and modified.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
Canada	Risk Assessments for Priority Substances PSL1 and PSL2	PSL1 was first published in 1989 and risk assessments were completed for the 44 substances within 5 years. PSL2 was first published in 1995 and risk assessments for the 25 substances were completed by 2002.	CEPA requires the Ministers of the Environment and of Health to establish a Priority Substances List (PSL) that identifies substances to be assessed on a priority basis to determine whether they are toxic and pose a risk to the health of Canadians or to the environment.	Risk Assessments are available for 69 chemicals identified as Priority Substance List 1 (44) or Priority Substance List 2 (25)	Accessible from the OECD eChemPortal or the Health Canada website. The PSL1 and PSL2 Lists are not searchable, but users can locate the chemical name of interest by scrolling down the page to find a match. Downloadable files containing the risk assessments are accessed by clicking on the substance name.	The complexity and the depth of assessments can vary depending on the specific type of assessment. PSL Assessments are usually fairly comprehensive and include: - Substance identity - Physical chemical properties, - Use patterns and sources, - Releases to the environment , - Environmental fate, - Persistence and bioaccumulation potential, - Human health exposure characterization, - Quantification of potential adverse effects on human health and/or non-human organisms resulting from exposure to various concentrations, doses or intake rates of a substance through the exposure pathways identified in the exposure assessment, - Risk characterization, - Uncertainties, - References.	All risk assessments are based on sound-science, consider multiple lines of evidence and uncertainties, and apply precaution. Furthermore, they are all conducted to evaluate the potential of a substance or a group of substances to cause harm to Canadians and/or the Canadian environment. A weight-of-evidence approach, and precaution are applied throughout the assessment process. The available EHS information and assessment reports have been peer-reviewed by the governmental authorities and/or independent Canadian or international experts.	Canada describes multiples ways in which it acquires new information that may update prior risk assessments, or which may affect the prioritization of substances for future risk assessments. Such information can come from a variety of sources	The original 69 risk assessments have been archived and there are no plans to update them. The next phase (sometimes referred to as the third phase) of the CMP, launched in May 2016, will address the remaining 1,550 priority chemicals out of the original 4300 chemicals identified as priorities during the categorization . The Minister of Health and the Minister of Environment and Climate Change have committed to addressing these chemicals by 2020.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
Japan CMC	J-CHECK	Could not be determined from website.	The focus of these databases is on what the Japanese government estimates are the 7,000-8,000 industrial chemicals produced or imported above 1 tonne per annum that are on the market.	~7,000-8,000	Accessible through searching OECD eChemPortal or directly from the Japan CMC website. Search capabilities • List and classification of CSCL • List of Japan HPV Challenge program • CAS Registry Number • MITI number • Chemical Substance name (Exact match, Substructure match) • Search by structure • Regulatory Classification • Endpoints User instructions for conducting searches of J-CHECK are available at http://www.nite.go.jp/en/chem/chrip/chrip_search/dt/pdf/other/EN_manual.pdf .	Environmental Hazard information • Biodegradation • Bioaccumulation • Partition coefficient • Algae growth inhibition test • Daphnia Acute Immobilization test • Daphnia Reproduction test • Fish Acute toxicity test • Fish prolonged toxicity test • Fish early life stage toxicity test • Other tests, if available	Not all data of Existing Chemicals Survey Program Conducted by the Japanese Government are peer reviewed. Data of Japan HPV Challenge Program are not reviewed.	Maintenance of the database is the responsibility of the National Institute of Technology and Evaluation (NITE), Japan. Procedures for updating could not be located. Aiming to keep the content of this site accurate and up to date, NITE makes no warranties or representations regarding the quality, accuracy, completeness or reliability of information on the site.	Ongoing. A history of updates to the database is accessible to users.

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EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
Japan CMC	CHRIIP®	Could not be determined from website.	The focus of these databases is on what the Japanese government estimates are 7,000-8,000 industrial chemicals produced or imported above 1 tonne per annum that are on the market.	As of this writing, it contains EHS information on approximately 250,000 substances.	Accessible from searching the California DTSC's CIT or TIC databases or directly from the Japan CMC website. Users can search the comprehensive information on a target chemical substance (information on hazardous property/hazard assessments or regulations, etc.) by entering its number or name as a keyword. Searches may be done by using the following item as a keyword. • CHRIP_ID • Chemical Substance Name • CAS No. • MITI No. • ISHA No. • EC No. • UN No. The controlled chemical substances by each law or the assessed substances by each organization, etc. will be displayed in an individual list. Specifying a substance on a list, you can also see comprehensive information (contains information on hazard assessments or regulations, etc.). There are very helpful search instructions available at http://www.nite.go.jp/en/chem/chrp/chrp_search/html/naviHelp.html#srhInput	The information related to the selected substance is displayed in a tree format and includes the following: - Substance Identity and Structure - Chemical Hazard and Risk Information - GHS Classification according to the Japanese government. - Hazard and Risk Assessment Reports from other Countries	Provides reliable data published by national and international authorities. The quality of the database is ensured by regular updates performed once every two months, and by a continual verification process.	Maintenance of the database is the responsibility of the National Institute of Technology and Evaluation (NITE), Japan. The quality of the database is ensured by regular updates performed once every two months, and by a continual verification process.	Ongoing. A history of updates to the database is accessible to users.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
USEPA	CHEMVIEW	2017	Although USEPA has authority to regulate a wide range of substances, for the purposes of the current project the interest is restricted to their authority under TSCA. The scope of TSCA is restricted to chemical substances which are manufactured, imported, or processed "for a commercial purpose". Excluded from scope are drugs, tobacco, nuclear materials, munitions, food additives, cosmetics or chemicals used solely as pesticides.	USEPA is populating the database in phases, and it currently contains information on ~15,000 chemicals.	Accessible through the California TIC or directly from the USEPA website. Searches may be done by: Chemical Name or Identifier (including CAS, Accession, or PMN numbers) Use (52 separate categories) Functional use and use categories for Significant New Use Notification (20 separate categories) Chemical Group (8 separate categories) Effects/Endpoints (5 separate categories of health or environmental effects). A Users Guide (https://chemview.epa.gov/chemview/resources/ChemView%20Public%20UI%20Guide.pdf) to make it easy to search the ChemView database.	Provides key information in a layered summary format and provides links to underlying studies or other source documents. Data Submitted to USEPA, USEPA Assessments, USEPA Actions Manufacturing, Processing, Use, and Release Data Maintained by USEPA ChemView expands its search capabilities to include the Other Sources tab. The public is able to gain access simultaneously to searches of reports and dataset information provided by other federal organizations. This expanded search allows users to view, compare, and analyze multiple source chemical data, increasing safer chemical decision-making.	EPA must evaluate both hazard and exposure, exclude consideration of costs or other non-risk factors, use scientific information and approaches in a manner that is consistent with the requirements in TSCA for the best available science, and ensure decisions are based on the weight-of-scientific-evidence. All EPA evaluations undergo peer review and are subject to a minimum 60-day public comment period.	EPA updates its assessments whenever they become aware of significant new substantial risk information, which includes new scientific information that impact the hazard assessment or significant new use/exposure information.	Ongoing.

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EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
USEPA	ACToR	2012 (although earlier versions date to 2002)	Although USEPA has authority to regulate a wide range of substances, for the purposes of the current project the interest is restricted to their authority under TSCA. The scope of TSCA is restricted to chemical substances which are manufactured, imported, or processed "for a commercial purpose". Excluded from scope are drugs, tobacco, nuclear materials, munitions, food additives, cosmetics or chemicals used solely as pesticides.	The Chemistry Dashboard (https://comptox.epa.gov/dashboard) provides access to a variety of information on over 700,000 chemicals currently in use. ToxCast Dashboard has data on over 9,000 chemicals and information from more than 1,000 high-throughput assay endpoint components.	Accessible by searching OCED's eChemPortal, California's DSTC CIT or TIC databases or directly via the US EPA website. Searchable by chemical name, CASRN, or structure. Users may browse assays by toxicity, category, or data collection. USEPA has created a video tutorial (https://www.youtube.com/watch?v=IZcDgF4glLw&feature=youtu.be) to assist those wishing to conduct advanced searches of the Chemistry Dashboard database.	Within the Chemistry Dashboard, users can access chemical structures, experimental and predicted physicochemical and toxicity data, and additional links to relevant websites and applications. The ToxCast Dashboard summarizes chemical information. Chemical structure and data such as CASRN, simplified molecular input line entry system (SMILES), IUPAC International Chemical Identifier (InChI), chemical structures, chemical annotations, quality control information on the chemical tested, information on the chemical sample, and physicochemical properties. • Chemical assay activity summaries and charts for the selected chemicals. • Chemical Product Category (CPCAT) information listing product use category for the selected chemicals. Exposure estimations based on manufacture and use information for the chemicals selected. ToxCast users can select assays of interest using a number of filters. Assay filters include gene symbol, intended target, assay name, tissue, and 'actives' only.	The Computational Toxicology work being done by USEPA that underpins ACToR, Chemistry and ToxCast Dashboards is leading edge science. USEPA points to a long list of peer-reviewed journal publications that have been written about uses for the Dashboard. ACToR itself is not peer reviewed; ACToR only contains publicly available datasets which have been previously published.	These databases are maintained by the National Center for Computational Toxicology. EPA's efforts actively engage a wide-range of partners including EPA regions and program offices, industry, academia, trade associations, other federal agencies, state and local government agencies and non-governmental organizations to help make this new chemical information more understandable and useable. EPA's computational toxicology stakeholder outreach includes workshops, webinars and training for partners as well as opportunities for stakeholders to provide suggestions for enhancing the research activities. Monthly Communities of Practice webinars are held and anyone with an interest in computational toxicology research can participate.	Ongoing. Computational toxicology tools continue to expand and offer the potential to replace animal testing. More recently, ACToR has incorporated new tools for screening chemicals for potential interaction with endocrine systems.

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EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
US ATSDR	ATSDR Toxic Substances Portal	Could not be determined from the website, although Congress first authorized ATSDR to establish, maintain and disseminate toxicological databases in 1986.	Substances that are most commonly found at facilities on the National Priority List (NPL) and which are determined to pose the most significant potential threat to human health due to their known or suspected toxicity and potential for human exposure at these NPL sites.	Toxicological Profiles are published for nearly 200 substances or chemical families (e.g., polycyclic aromatic hydrocarbons) and profiles are under development for approximately 30 more substances.	Accessible by searching California DTSC TIC or directly via the ATSDR website. The Portal may be searched for substances by: Alphabetical Listing (A-Z) Chemical Abstracts Service Number (CAS#) Substance Name Synonym Tradename Individual States where they have been found in communities. Alternatively, the Portal may be searched for toxicological information by: Effects on Organ Systems and their Development Cancer Classification Structures, Properties or Use (14 separate categories) Audience (i.e., community members, emergency responders, toxicological and health professionals, and health care providers) Although no user guide to assist in conducting searches could be located, the search process is intuitive using point and click on text descriptors supplemented with icons.	Each ATSDR Toxicological Profile has the following chapters: ▪ Preface ▪ Public Health Statement ▪ Relevance to Public Health ▪ Health Effects ▪ Chemical and Physical Information ▪ Production, Import, Use, and Disposal ▪ Potential for Human Exposure ▪ Analytical Methods ▪ Regulations and Advisories ▪ References ▪ Glossary ▪ Appendices ◦ References ◦ Disclaimer ◦ Where can I get more information?	ATSDR has published detailed guidance for preparing toxicology profiles https://www.atsdr.cdc.gov/toxprofiles/guidance/profile_development_guidance.pdf . They outline how ATSDR evaluates the quality of individual studies and how they apply a weight of evidence approach. All toxicology profiles are peer-reviewed and a subject to a 90-day public comment period.	The purpose of Toxicological Profiles Addenda is to provide, to the public and other federal, state, and local agencies a non-peer reviewed supplement of the scientific data that were published in the open peer-reviewed literature since the release of the profile. ATSDR encourages users of their Toxicology Profiles that, if they are aware of new or additional studies that will contribute to the database please send them the information.	Ongoing. Toxicology profiles carry dates from as early as 1989 to the present.

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EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
EWG	Skin-DeepTM	2004	Focus is on chemical ingredients found in 74,032 cosmetics and personal care products in the U.S. divided into some 130 product categories (e.g., shampoo, toothpaste, deodorant, etc.).	Contains information on ~9,000 personal care product ingredients	Accessible through searching California DTSC's TIC or directly from the EWG website. Can be searched by: • Product name • Ingredient • Name of Company Marketing the Product • Product Category A user's guide to assist with searches is available http://www.ewg.org/skindeep/users-guide-to-skin-deep/#.WqK6A2aZNBw.	• Chemical structure • Chemical/Physical Properties • Function/Uses • Synonyms • Rating (Low, Moderate or High) of Health Concerns: • Overall Hazard • Cancer • Developmental and Reproductive Toxicity • Allergies and Immunotoxicity • Use Restrictions • Data Gaps • Eco-toxicity • Multiple Additive Exposure Sources • Organ System Toxicity (excluding Reproductive Toxicity) • Persistence and Bioaccumulation • References • Data Sources Absent is any discussion of safe levels of exposure, typical exposure levels encountered during normal use or of risk assessments that may have been conducted by any parties.	EWG has worked to ensure the accuracy of the information it provides through its Skin-Deep database. EWG assigned numeric hazard scores for each scoring category based on professional judgment of the relative importance of each with respect to potential health concerns. These scores were informed by a number of factors, including the weight of the evidence associated with each scoring category (e.g. whether the chemical categorization is derived from a full government assessment or from a single peer-reviewed study), and by other hazard classification systems, such as the Nordic Substances Database. No external peer review is described nor, do they discuss soliciting public input.	EWG notes that the database is dynamic, and that product ratings on any of these properties may change based on evolving science, new information, or other factors. The product ratings, images, conclusions, recommendations, and findings that appear in Skin-Deep reflect EWG's research at the time of publication. They advise that this information frequently relies on data obtained from many sources, and accordingly, EWG cannot guarantee the accuracy of the information provided or any analysis based thereon. Moreover, in light of evolving regulatory and market conditions, subsequent product reformulations, and other factors, this information may no longer be current. EWG makes no representations or warranties about Skin-Deep.	Ongoing.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
USEPA	IRIS	1985 (available on the internet since 1997)	Although USEPA has authority to regulate a wide range of substances, for the purposes of the current project the interest is restricted to their authority under TSCA. The scope of TSCA is restricted to chemical substances which are manufactured, imported, or processed "for a commercial purpose". Excluded from scope are drugs, tobacco, nuclear materials, munitions, food additives, cosmetics or chemicals used solely as pesticides.	Final IRIS Assessments are available for 511 substances or families of substances. Another 22 Assessments are listed as in development.	Accessible by searching OCED's eChemPortal, California's DSTC CIT or TIC databases or directly via the US EPA website. It can be searched by Chemical Name, CASN or Keyword or by Noncancer or Cancer, Route of Exposure, Organ/System Affected, Toxicity Value Noncancer, Uncertainty Factor Value, Weight of Evidence Carcinogenicity, and Toxicity Value Cancer. Searches using filters for organ/system affected are limited to effects (or tumor sites) used to derive the RfD, RfC, oral slope factor, or inhalation unit risk. IRIS Advanced Search searches only final IRIS assessments; to look for information on draft assessments, see https://cfpub.epa.gov/ncea/iris2/atoz.cfm .	IRIS assessments provide the following toxicity values for health effects resulting from chronic exposure to chemicals: Reference Concentration (RfC) Reference Dose (RfD) Cancer descriptors Oral slope factor (OSF) Inhalation unit risk (IUR)	USEPA has numerous guidance documents available for conducting IRIS assessments (https://www.epa.gov/iris/basic-information-about-integrated-risk-information-system). All EPA evaluations undergo peer review and are subject to a minimum 60-day public comment period. USEPA has been implementing a plan to respond to criticisms of IRIS that have been leveled by a number of stakeholders.	EPA updates its assessments whenever they become aware of significant new substantial risk information, which includes new scientific information that impact the hazard assessment or significant new use/exposure information.	Ongoing. Assessments carry dates from as early as 1987 to the present.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
ChemSec	SIN List	2008	Only substances covered by the authorization provisions in EU REACH are candidates for inclusion on the SIN list. Substances exempt or otherwise not regulated by REACH, such as pesticides, intermediates and unintentionally produced substances, are not included. Includes only chemicals judged as fulfilling the criteria for Substances of Very High Concern (SVHC), as described in REACH. Either Carcinogenic, Mutagenic or Toxic to Reproduction; Persistent, Bio-accumulative and Toxic or very Persistent and very Bio-accumulative; or "substances of equivalent concern"	There are 916 substances included on the SIN list. ChemSec speculates that over time, the SIN list could grow to an estimated 2000 substances.	Can be searched by: - CAS Number - Chemical Name Searches can also be filtered by: - Health and Environmental Concerns (e.g., endocrine disruptor, carcinogen, mutagenic, toxic to reproduction, PBT/vPvB, etc.) - Uses (9 categories) - REACH status - Date of first appearance on the SIN list - Production Volume (4 categories) - SIN List Groups (see below for description) - Producers (alphabetized list) No users guide for conducting searches could be located, but the search process is very intuitive.	Only a limited amount of information is generated by a search, including: A short description of the reason for inclusion on the SIN List - REACH status - Hazard class and category code(s) - Synonyms - EC number - CAS # - Hazard statement code(s) - Registered production volume (Bio)monitoring data, if available - Possible uses - Registered use(s) - Sector End Use (SU) - Chemical formula - Substitution options (if identified by ChemSec) - Producers (company names) Absent is any discussion of safe levels of exposure, typical exposure levels encountered during normal use or of risk assessments that may have been conducted.	Developed in close collaboration with scientists and technical experts, as well as an NGO advisory committee of leading environmental, health, women and consumer organizations mainly in Europe but also in the US. The list is based on credible, publicly available information from existing databases and scientific studies, as well as new research. Users will not find the scientific references to substantiate the reasons for each substance in the database but are encouraged to contact ChemSec by e-mail. Note that for substances having already an official classification as being CMR – this is enough for inclusion on the SIN List and ChemSec does not have additional background data.	ChemSec recognizes the need to regularly update their list with new scientific and regulatory information. Updates have been episodic and have employed different procedures at various points in time.	The SIN List has been updated in 2009, 2011, 2013, 2014, 2015, 2016 and 2017.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
Australia	Chemical Information	2012	Industrial chemicals listed in AICS, including polymers, regardless of volume	PEC Assessments are available for 43 chemicals or chemical families. Tier I IMAP Assessments are available for ~3000 chemicals; Tier II assessments are available for selected chemicals or chemical families; Tier III assessments are available for ~16 chemicals. Other Assessments are available for another 30 or so chemicals.	Access to IMPA Assessments may be done through the OECD eChemPortal or directly from the Australian Chemical Information website. Searches of the Tier I IMAP Assessments may be done by CAS# or chemical name. The PEC, Tier II, Tier III and Other Assessments are available in spreadsheets that can be sorted using a number of terms.	Tier I IMAP Assessments list chemicals that have been found not to present an unreasonable risk to human health or the environment and provide limited EHS information. All other Assessments provide a full range of EHS information, including hazards, use and exposure, hazard and risk assessments and risk management recommendations.	NICNAS takes a scientifically robust approach, providing for peer-review and public comment at the appropriate times.	Companies must notify NICNAS of significant new uses, volumes or new hazard information. NICNAS updates its assessments in response to significant new information.	Ongoing. PEC Assessments span dates from the mid-1990's to the present. IMAP Assessments started in 2012 and are ongoing.

Table 2 — Summary of Single, Primary EHS Information Sources

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	EHS Information	Information Quality	Procedures for Updating	Date of Last Update
New Zealand	CCID	HSNO was adopted in 1996	Includes hazardous and non-hazardous chemicals, pesticides, polymers, non-infectious organisms, and veterinary medicines. Excludes medicines intended for humans, radioactive materials, Food, manufactured articles, infectious organisms.	~28,000	Accessible from the OECD eChemPortal or from the New Zealand CCID website. Can be searched by CAS# or Name. No guidance to assist with searches could be located.	A determination as to whether the substance meets the definition of hazardous and what restrictions apply. Includes a more substantive discussion of the scientific evidence that supports a hazardous classification with reference to specific studies and relevant findings.	NZEPA is committed to science and risk-based decision making and draws on local and international scientific information and expertise. Determinations are peer-reviewed and include opportunity for public comment.	All new hazardous substances must be notified to NZEPA. Anyone can apply for a reassessment based on new information. NZEPA has well-developed procedures in place for conducting reassessments.	Ongoing.
GoodGuide	GoodGuide	2008	GoodGuide focuses on rating everyday household consumer products, and their chemical ingredients, bought either from offline or online retail outlets like supermarkets or e-commerce sites. Their core product categories are personal care, household chemical and food products.	Unknown, but likely in the thousands	GoodGuide may be searched in any number of ways: product category, subcategory, keywords, CAS# and chemical name. Indexes are also available by Category, Company, Brand, Product and Ingredient. No users guide could be found.	A search of information on chemical ingredients will yield GoodGuide's rating of health concerns (high, medium, low or none); a listing of health hazard statements, the product category in which it is found as an ingredient and specific brand name of products that contain it. Note: GoodGuide typically does not provide access to the entire set of data used to determine health concern levels assigned to ingredients	They strive to be the most reliable source of information on consumer products. They employ quality assurance and quality control (QA/QC) processes to ensure that the highest standards of data integrity are met and maintained. GoodGuide assesses the quality and credibility of each contributing data source based on the source's data collection process, public reputation and reviews received by experts in relevant fields.	The age of data used by GoodGuide varies by source. Their stated goal is to refresh product-level information at least once every 18 months.	Ongoing

3.3 *Primary Sources Which Provide Access to EHS-Type Regulatory Decisions*

The final category of EHS information sources reviewed are the databases that provide EHS-type regulatory decisions on specific chemicals. Ten such databases are included in this report (ECHA's Substances Restricted Under REACH List and Candidate SVHC List, Canada's Categorization Results, California DTSC Candidate List, USEPA's SRS, South Korea's NCIS, Australia's AICS, New Zealand's HSNO Register and NZIoC, and China's IECSC) and are summarized against the quality criteria in Table 3. These databases do not provide users with EHS information per se. Instead they provide key decisions that, when combined with regulatory criteria used to make those decisions, give users insight as to how other governments view those chemicals. They also provide insights into how those governments are taking regulatory actions to further investigate and manage the risks they pose to human health and/or the environment. Those actions may or may not be of relevance to other users.

Each of the ten databases is easily accessed and searched using commonly available terms; however, the China IECSC is officially only available in Chinese (an unofficial version can be obtained from several consulting firms as noted in Appendix B16.).

Canada's Categorization Results database may be the most relevant for many users because it presents regulatory decisions on all 23,000 chemical substances identified as being in commerce in Canada. All such substances were categorized to identify those that were: (1) inherently toxic to humans or to the environment and that might be persistent and/or bioaccumulative; or (2) presented the greatest potential for human exposure; or (3) considered a priority for assessment based on other health concerns. Many governments around the world have been looking for simpler, less expensive and quicker approaches to characterizing the hazard and risks of chemicals and the results of Canada's efforts can possibly be leveraged by them for their own purposes.

The Republic of Korea's database represents an inventory of all chemicals, including polymers, that have been notified as being on their market at any time since before 1991 to the present down to volumes as low as 0.01 ton per year. Some substances are designated as toxic, restricted or prohibited, or subject to accident preparation; however, not all substances on the inventory have been assessed, so some caution needs to be undertaken in interpreting the data.

Australia's AICS also represents an inventory of all chemicals, including polymers, regardless of volume produced or imported. It provides conditions of use for a subset of chemicals that are considered to pose unacceptable risks unless well controlled.

New Zealand's NZIoC also represents an inventory of all chemical substances and non-infectious organisms, including pesticides, polymers, and other non-industrial chemicals regardless of volume produced or imported. NZEPA ensures that all chemical substances notified have been classified as to whether they meet their definition for hazardous. NZIoC contains the hazardous classification and any restrictions placed on those chemicals, but does not provide the rationale for the classification.

ECHA maintains two databases of regulatory decisions. The first contains information on the 66 substances currently restricted under REACH. Available for each entry is a description of the regulatory conditions that have been placed on them. ECHA also maintains a database of the substances that are candidates for making the list of Substances of Very High Concern (i.e., CMRs, PBTs, vPvB, and

substances of “equivalent concern”). Each entry in this database includes a link to the REACH dossier for that substance. Again, some governments are likely to find these two databases useful to their efforts to prioritize chemicals for further scrutiny, risk assessment and risk management.

California DTSC’s Candidate Chemicals List identifies approximately 2,300 chemicals found in consumer products. The list was developed from 23 “authoritative lists”, which fall into one of two categories: lists based on hazard traits (15 lists), and lists based on potential exposure concerns (8 lists). A Candidate Chemical must appear on one or more of these lists and must exhibit a hazard trait and/or environmental or toxicological endpoint. The next step is identification of consumer products that contain one or more Candidate Chemicals. Producers of such products must then complete an Alternatives Assessment and submit it to DTSC for review and action. Some users may be intrigued by the process that DTSC used and find value in its Candidate Chemical list, again for prioritizing chemicals for additional evaluation.

Although USEPA’s SRS shares some features with the other databases included in this category (e.g., it does not provide EHS information per se), it is somewhat unique in that it provides links, when known, from each SRS substance record to external sites and fact sheets. These external sites may be for USEPA programs, other U.S. agencies, or international organizations.

There is a record in the SRS for every substance that is tracked or regulated at USEPA. Each record provides basic information about that substance, such as the Chemical Abstract Service (CAS) number for a chemical or the Taxonomic Serial Number (TSN) for a biological organism. Each record also identifies standardized nomenclature about the substance and any synonyms in use at USEPA. The initial purpose of the SRS is, as the name implies, to register substances. The SRS is a registry or catalog of the substances that are identified by a U.S. federal environmental statute or that are tracked or regulated by any program at USEPA. The SRS does not contain the programmatic data for the substances; it simply identifies the substances; identifies the USEPA programs that track or regulate those substances; and identifies the names used for those substances by those programs.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
ECHA	Substances Restricted Under REACH	Directive 76/769/EEC was adopted in 1976 and was replaced by EU REACH in 2007.	Includes all the restrictions adopted in the framework of REACH and the previous legislation, Directive 76/769/EEC.	66 substances or substance families.	List can be filtered by Name, CAS#, EC Number and Entry Number in Annex VIII. Alternatively, the list may be viewed alphabetically.	Each entry shows a substance or a group of substances or a substance in a mixture, and the consequent restriction conditions placed on it prior to being able to market it in the EU.	Substance identity.	A Member State, or ECHA, at the request of the European Commission, can start the restriction procedure when they are concerned that a certain substance poses an unacceptable risk to human health or the environment. ECHA can also propose a restriction on articles containing substances that are on the Authorization List. The intention to prepare a restriction proposal is made public in the registry of intentions before the proposal file itself is prepared so as to give an advance warning. The dossier proposing the restriction contains background information such as the identity of the substance and justifications for the proposed restrictions. It includes the identified risks, any information on alternatives to the substance and the costs, as well as the environmental and human health benefits, resulting from the restriction. The dossier needs to be prepared according to the REACH Regulation (Annex XV) and has to be submitted to ECHA within 12 months of the intention to prepare the proposal was notified.	Ongoing.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
ECHA	Candidate List of Substances of Very High Concern	2008	Only substances covered by the authorization provisions in EU REACH are candidates for inclusion on the list. Substances exempt or otherwise not regulated by REACH, such as pesticides, intermediates and unintentionally produced substances, are not included. Includes only chemicals judged as fulfilling the criteria for Substances of Very High Concern (SVHC), as described in REACH. Either Carcinogenic, Mutagenic or Toxic to Reproduction; Persistent, Bio-accumulative and Toxic or very Persistent and very Bio-accumulative; or "substances of equivalent concern". The route to authorization starts when a Member State or ECHA, at the request of the Commission, proposes a substance to be identified as an SVHC.	181 Substances	List can be filtered by Name, CAS#, EC Number, Intrinsic Properties, Date of Inclusion on the list. Alternatively, the list may be viewed alphabetically.	Substances included on this list have been nominated as candidates for Authorization under REACH.	A link to the IUCLID dataset for the listed substances.	The intention to propose a substance for identification as an SVHC is published in the registry of intentions before the proposal is submitted, to inform industry and other stakeholders in advance of the submission. The first part of the proposal provides the data and justification for identifying the substance as an SVHC. The second part, examined during the follow-up steps after the identification, includes information on volumes on the EU market, the uses and possible alternatives to the substance. After publication of the proposal, anyone can comment on it or provide further information during the 45-day consultation. When comments are received that provide new information or challenge the basis for the identification as an SVHC, both the proposal and the comments are referred to the Member State Committee (MSC) to agree on the identification of the substance as an SVHC. If the committee reaches a unanimous agreement, the substance is added to the Candidate List. If the committee does not reach a unanimous agreement, the matter is referred to the Commission.	Ongoing since 2008.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
Canada	Categorization Results	2006	Substances used, imported or manufactured in Canada for commercial purposes between January 1, 1984, and December 31, 1986 at a quantity of greater than 100 kilograms per year. It includes discrete organic compounds, inorganic substances, organometallic substances, polymers, and unknown or variable composition complex reaction products or biological material such as acetone or iron. Approximately 4,300 chemical substances that were determined after categorization as warranting further attention	~23,000 substances	Accessed through OECD's eChemPortal or directly via Health Canada's website. Searches may be done by entering a chemical name and the CAS (Chemical Abstracts Service Registry) number to obtain categorization results for a particular substance. A number of pre-set searches are provided, to narrow the search results to smaller, more specific categories, such as Ecological Categorization Results, Human Health Categorization Results and others.	Substances were categorized to identify those that were: • inherently toxic to humans or to the environment and that might be: ◦ persistent (take a very long time to break down), and/or ◦ bioaccumulative (collect in living organisms and end up in the food chain) • substances to which people might have greatest potential for exposure. Additionally, substances considered a priority for assessment based on other health concerns were considered as part of this prioritization exercise.	Meets CEPA Categorization Criteria? (Y/N) Meets Human Health Categorization Criteria? (Y/N) Human Health Priorities (Visit Health Canada for more information) Meets Environmental Criteria for Categorization Persistent? (Y/N) Bioaccumulative ? (Y/N) Inherently Toxic to Aquatic Organisms? (Y/N)	Using information from Canadian industry, academic research and other countries, Canadian government scientists work with partners in applying a set of rigorous tools to conduct categorization, screening level assessments and risk assessments for priority list substances. Information and assessment reports have been peer-reviewed by the governmental authorities and/or independent Canadian or international experts. Details of the peer-review process can be found in the introduction of each report. Additionally, under the CEPA 1999, the assessment reports are subject to a mandatory 60-day public comment period in which the assessments are published on the Departmental websites permitting comments from the public, stakeholders and concerned groups on the scientific findings	Ongoing. Although the initial categorization was completed in 2006, and the data is not planned to be updated, the Canadian government has changed the categorization of some substances when presented with new scientific information. In addition, all new substances entering the Canadian market since 2006 must undergo categorization.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
California DTSC	Candidate Chemical List	2013	Industrial chemicals that are ingredients in consumer products produced or sold in California. Products exempt from SCP include: drugs, medical devices, dental restoratives, food and pesticides. The focus is on ~2300 Candidate Chemicals which by definition exhibit a hazard trait and/or environmental or toxicological endpoint.	~1,100 grouped Candidate Chemicals, which includes group names and Candidate Chemicals that are not in a group. There are ~2,300 Candidate Chemicals if all Candidate Chemicals (regardless of the group association) are counted. The list is expected to grow with time.	Can be searched by: CAS# and Chemical Name, Group Name, Chemicals of Concern, by hazard traits, authoritative lists, or by potentially excluded Candidate Chemicals. Alternatively, users may download the entire list for exporting to an Excel file for viewing or printing. Help for conducting searches may be found at https://calsafer.dtsc.ca.gov/cms/faq/	List was developed from 23 authoritative lists, which fall into one of two categories: lists based on hazard traits (15 lists), and lists based on potential exposure concerns (8 lists). A Candidate Chemical must appear on one or more of these lists and must exhibit a hazard trait and/or environmental or toxicological endpoint. Candidate chemicals. The next step is identification of consumer products that contain one or more Candidate Chemicals. Producers of such products must then complete an Alternatives Assessment and submit it to DTSC for review and action.	CAS#, Chemical group, whether a potential exclusion applies, the particular hazard trait, and names of authoritative bodies that served as the source of information.	The List is updated when there are changes to the authoritative lists. DTSC reviews and updates the Informational List quarterly to reflect these changes. DTSC may add individual chemicals or chemical source lists to the Candidate Chemicals list or remove them by adopting new regulations. These revisions may be a result of DTSC research or a petition submitted by an external stakeholder. Anyone wishing DTSC to revise the Candidate Chemicals list may submit a petition. DTSC will add to or remove Candidate Chemicals from the Informational List after regulations have been adopted and they take effect.	Ongoing.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
USEPA	SRS	Could not be determined from website.	Although USEPA has authority to regulate a wide range of substances, for the purposes of the current project the interest is restricted to their authority under TSCA. The scope of TSCA is restricted to chemical substances which are manufactured, imported, or processed "for a commercial purpose". Excluded from scope are drugs, tobacco, nuclear materials, munitions, food additives, and cosmetics.	>100,000	Accessible by searching OCED's eChemPortal, California's DSTC CIT or TIC databases or directly via the US EPA website. It may be searched by chemical, substance, or biological name or ID (CAS #, EPA ID, TSN, or internal tracking number) by single entry or multiple entries or by chemical/substance lists. USEPA has a number of published resources available to assist with searches of the database.	Makes it possible to identify which USEPA data systems, environmental statutes, or other sources have information about a substance and which synonym is used by that system or statute. It becomes possible therefore to map substance data across EPA programs regardless of synonym.	Hazard information is not available in the SRS. However, the SRS provides links, when known, from each SRS substance record to external sites and fact sheets. These external sites may be for USEPA programs, other U.S. agencies, or international organizations.	Quality for SRS data is an on-going effort. With more than 100,000 records in SRS there are enormous opportunities for error. EPA focuses on quality in three areas for SRS: Quality of the information provided by SRS; Assessment of the accuracy of the synonyms that are used by EPA programs; Value of the available information; e.g., links to related websites. Core metadata (e.g., CAS name, CAS number, molecular weight) for a majority of the chemicals is made available from a program office at the US EPA that obtains the data from the Chemical Abstract Service. Data quality for core metadata for other chemicals is reviewed on a periodic basis. Programmatic information (e.g., the synonym used by a particular EPA program office) is managed within the SRS by designated stewards from that program office.	Ongoing.
South Korea	NCIS	2008	In scope are substances produced or imported into the Korean market as low as 0.01 ton/year as well as polymers. Out of scope are naturally occurring substances and chemicals regulated under other Acts such as pesticides, pharmaceuticals, medical devices, fertilizers, radioactive substances, etc.	More than 44,000 chemical substances.	Searches may be done using CAS#, Chemical Name in Korean or English, and unique chemical number. Searching is intuitive and there is no English language help document available.	Phase in substance subject to registration. Toxic Substances Restricted Substances Prohibited Substances. . Substances requiring preparation for accidents.	For restricted and prohibited substances there is an explanation of the conditions placed on production, import and use.	All new chemicals must be notified to MOE and are then added to NCIS. Companies are required to notify MOE of any significant changes in production or import volume, and any changes in use, hazard or risk. Failure to comply is subject to civil and criminal penalties and fines.	Ongoing.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
Australia	AICS	Late 1990's	All industrial chemicals, including polymers, regardless of the volume manufactured or imported. Excluded are chemicals used solely for the following purposes: pesticides, agricultural products, veterinary medicines, food for animals, pool sanitizers, medical devices (including disinfectants and sterilizers), medicines, biologicals, sunscreen products, and food for humans.	~40,000	Can be searched by CAS#, CAS Name, or Molecular Formula	If Secondary Notification Conditions apply and the nature of any stipulated conditions of use.	None	All new chemicals must be notified to NICNAS prior to manufacture, import or use. Significant new uses, volumes or new hazard information must also be notified.	Ongoing.
New Zealand	HSNO Application Register NZIoC	HSNO Act was adopted in 1996	Includes hazardous and non-hazardous chemicals, pesticides, polymers, non-infectious organisms, and veterinary medicines. Excludes medicines intended for humans, radioactive materials, Food, manufactured articles, infectious organisms.	~28,000	Can be searched by CAS# or Name. No guidance to assist with searches could be located.	A determination as to whether the substance meets the definition of hazardous and what restrictions apply.	The HSNO Application Register includes a very brief description of the basis for the hazardous substance determination.	All new hazardous substances must be notified to NZEPA. Anyone can apply for a reassessment based on new information. NZEPA has well-developed procedures in place for conducting reassessments.	Ongoing.

Table 3 — Summary of Information Sources that Provide EHS Regulatory Decisions

EHS Information Source	Database Name (weblink)	Date of Inception	Scope	Estimated Number of Chemicals	Ease of Access	Regulatory Decision	Other Information Available	Procedures for Updating	Date of Last Update
China	IECSC	2011	All chemicals on the Chinese market, including polymers, regardless of the volume they are produced or imported. Excluded are pesticides, pharmaceuticals, cosmetics, food additives, naturally occurring substances, etc.	45,612 substances in IECSC. No CAS# were available for 8,486 of them. Any substance that is not listed on IECSC is regarded as a new substance in China and requires notification in accordance with China MEP Order 7 (China REACH).	A major impediment to using IECSC and the Catalogue of Hazardous Chemicals is that they are not generally available in English. Both may be downloaded and searched by Chinese chemical name or CAS#. No English language help is available for conducting the searches.	There is no English language information available from either IECSC or the Catalogue of Hazardous Chemicals.	Unknown	IECSC is updated with new chemicals only 5 years after the commencement of manufacture or import. Moreover, the availability of publicly accessible updated IECSC or Catalogue of Hazardous Chemicals is at the discretion of MEE and SAWS, respectively.	Ongoing, but IECSC is only updated every 5 years.

4. Estimating the Number of Industrial Chemicals in Commerce

Many audiences have expressed an interest in knowing the number of industrial chemicals currently in commerce, ostensibly so they can better quantify the gaps that exists in the collective knowledge of their hazards and risks. As has been demonstrated in section 3 above and in Appendix B, there now exists publicly available EHS information on tens of thousands of chemicals, particularly on those produced, imported and used in the largest quantities. But how large is the denominator?

Providing a credible estimate of the number of industrial chemicals in commerce has been problematic for a number of reasons. In a published article, [Goldman](#), Former Assistant Administrator for Toxic Substances at the U.S. Environmental Protection Agency (EPA), has recounted her experience at the USEPA and cited the following as barriers: uncertain and variable definitions of what's included under the rubrics of chemicals and even "industrial chemicals", varying volume thresholds for reporting, uncertainty as to whether chemicals initially notified to USEPA in 1976 still remain on the market, and whether new chemicals notified since then were even ever brought to the market. She lamented the lack of a good estimate and speculated that the number was likely to be in the range of 25,000 to 84,000 chemicals in the US. [Dennison](#), Lead Senior Scientist at the NGO Environmental Defense Fund, has provided an estimated range of 7,700 to 85,000 chemicals as being on the US market.

Unmentioned by either Goldman or Dennison was the tremendous incentive that existed for manufacturers or importers to over-report chemicals as being in commerce to the initial TSCA Inventory in 1976. Anything that was not included on the Inventory was then by definition considered a new chemical and could not be manufactured or imported until a PMN was filed with USEPA and reviewed. Many companies wished to avoid that uncertainty and to maintain their options. The approximate 62,000 chemicals first notified was therefore likely an over -estimate of the actual number of chemicals in commerce at that time. [The American Chemistry Council](#) has also pointed to what it suspects are a large number of duplicate entries in the TSCA Inventory.

Although a direct attribution could not be located, at least [one article](#) has reported that ECHA had at one time estimated that there were approximately 144,000 man-made chemicals in existence. However, the basis for that estimate was not provided.

ECHA maintains the European Community Inventory which, as of 11 August 2017, contained 106,211 unique substances/entries and is comprised of: the European INventory of Existing Commercial chemical Substances (EINECS⁵) which lists chemicals that were deemed to be on the European Community market between 1 January 1971 and 18 September 1981, the European List of Notified Chemical Substances which lists those substances which were notified under Directive 67/548/EEC, the Dangerous Substances Directive Notification of New Substances (NONS) that became commercially available after 18 September 1981, and No-Longer Polymers list which includes substances previously considered to be polymers were no longer excluded from regulation. The latter consists of such substances that were commercially available between 18 September 1981 and 31 October 1993. Because the European

⁵ Note: substances listed in EINECS are considered phase-in substances under REACH.

Community Inventory has not been updated to remove chemicals that are no longer on the market, reliance on it will likely over-estimate the number of chemicals currently in commerce.

The UN Environment Programme's [Global Chemicals Outlook 2013 report](#) provided an estimated range of 30,000 to 140,000 chemicals in commerce, globally.

Two separate initiatives, one in the US and the other in the EU, may provide a starting point to generate more current and robust estimates of the numbers of industrial chemicals in commerce.

US TSCA, as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act, requires USEPA to designate chemical substances on the TSCA Chemical Substance Inventory as either "active" or "inactive" in U.S. commerce. To accomplish that, [EPA finalized a rule](#) requiring industry to report on chemicals that were on the TSCA Inventory in June of 2016 and were manufactured (including imported) or processed in the U.S. at some time during the past 10 years, ending on June 21, 2016. This reporting is being used to identify which chemical substances on the TSCA Inventory are "active" in U.S. commerce and will help to inform the prioritization of chemicals for risk evaluation. The mandatory reporting period for manufacturers (includes importers) ended on February 7, 2018, and the voluntary reporting period for processors ended on October 5, 2018. Additionally, active and inactive designations for each chemical substance will be included as part of USEPA's regular publications of the TSCA Inventory.

With some exceptions, the USEPA TSCA Inventory update excludes chemicals that are categorized as:

- drugs
- tobacco
- nuclear material
- munitions
- food additives
- cosmetics or
- used solely as pesticides
- formed during the manufacture (or import) of an article
- manufactured solely for export
- formed by an incidental reaction or end-use reaction
- a mixture, impurity, naturally-occurring material, by-product or a non-isolated intermediate
- manufactured or processed in small quantities solely for research and development.
- manufactured or processed solely for test marketing purposes.

The original TSCA Inventory also provided some exemptions for chemicals produced or imported below 10 metric tonnes per year, although the recent update included no volume threshold for reporting chemicals that met the definition of "active" in commerce.

As of April 2018, USEPA made available a Microsoft Access file containing an update to the TSCA Inventory. This version of includes a new field designating which chemical substances were "active" in U.S. commerce, based on:

- Reporting from 2012 and 2016 Chemical Data Reporting cycles;
- Notices of Commencement received since June 21, 2006; and
- Notice of forms completed by manufacturers and importer received through February 7, 2018, per the TSCA Inventory Notifications (Active-Inactive) rule.

The updated TSCA Inventory shows 38,304 chemicals as active in commerce in the U.S. at some time during the 2006-2016 time frame. However, an analysis of it discovered the following:

- Approximately 31,000 chemical substances were added to the Non-CBI Active Inventory and approximately 7,300 chemicals to the CBI Active Inventory.
- 7,500 of them are polymers which are generally considered to be of “lower concern” in all regulatory schemes across the globe.
- Production and/or import volume information are available for 13,000 of the 31,000 Non-CBI Active substances and for 560 of the 7,500 CBI Active substances, with the remaining substances being either low volume or designated as “lower concern”. The vast majority of the total annual volume (99.8%) is concentrated among approximately 3,900 HPV chemicals, the vast majority of which are also in commerce in other jurisdictions.

For some perspective, by comparison, there are currently approximately 1,500 registered pesticide active ingredients in the US, including conventional chemicals (approximately 840), antimicrobials (approximately 320), and biopesticides (approximately 360).

Where known, the numbers of active pesticide ingredients are also presented below for other nations/regions to provide perspective. Because many governments more tightly regulate pesticide active ingredients, obtaining an accurate count of those that are in commerce is much easier to obtain than for industrial chemicals.

[ECHA maintains statistics](#) on the numbers of EU REACH registrations, and the number of substances that are covered by those registrations. The exemptions for EU REACH registration are fairly similar to those in place for TSCA notification, with the exception of volume where the original TSCA Inventory had a 10 tonne/year reporting threshold whereas EU REACH registers substances as low as 1 tonne per year. As of 20 August 2018, there were 21,248 unique substances registered for EU REACH. Manufacturers and importers had until May 31, 2018 to register substances in the 1-100 tonne/year tonnage band, and it can be expected that some additional substances will be registered after this deadline.

There are currently 443 registered active ingredient plant protection pesticides in the EU and 228 registered active ingredient biocidal (antimicrobial) products.

Although the US and EU estimates are the most current and reliable, there is some perspective to be gained by comparing them with other numerical estimates from other countries/regions.

The most recently released version (2015) of the Canadian DSL lists approximately 27,000 chemicals, 24,000 of which have a CAS# available. The remaining 3,000 chemicals are CBI substances with generic names and Canadian CBI identifiers. There is an overlap of 15,300 CAS#'s between the TSCA Non-CBI Active list and the Canadian DSL lists. Some of the discrepancy in numbers of chemicals between Canada and the US can be explained by Canada's low reporting threshold of 100 kilograms (0.1 metric tonnes) per year. Its definition is more expansive than that for either TSCA or EU REACH and includes discrete organic compounds, inorganic substances, organometallic substances, polymers, and unknown or variable composition complex reaction products or biological material such as acetone or iron. A major uncertainty with the Canadian DSL is how many of the listed chemicals remain active on the Canadian market.

For perspective, Canada lists 656 unique active pesticide ingredients as registered for use.

In Japan, it was estimated in 1973 that there were about 7,000-8,000 industrial chemicals with production or import above 1 tonne per year on their market requiring safety examination through a series of toxicity tests. More recently, Japan MOE has provided an estimate that in Fiscal Year 2012, there were 11,897 General Chemical Substances (i.e., industrial use) for which the sum of the quantities manufactured and imported was one ton or more. Of those substances, there were 7,699 General Chemical Substances for which the sum of the quantities manufactured and imported exceeded 10 tons. Japan also reported 565 agricultural pesticides were registered for use in 2012.

Australia's chemical inventory, AICS, lists approximately 40,000 chemical substances, including polymers, regardless of the volume of that substance that is manufactured or imported. No information could be located to determine which or how many of those listed substances are still active on the Australian market.

New Zealand's chemical inventory (NZIoC) includes approximately 28,000 substances, but this number is not directly comparable to estimates from other countries because their inventory includes many categories of substances that are excluded from the others, including: pesticides, polymers, veterinary medicines and non-infectious organisms. Furthermore, there was no volume threshold for reporting. No information could be located to determine which or how many of those listed substances are still active on the New Zealand market.

The Republic of Korea's chemical inventory, NCIS, lists more than 44,000 chemical substances. It also includes polymers, and chemicals that are produced or imported in volumes in excess of 0.01 tonnes/year. It excludes pesticides, pharmaceuticals and other substances that are regulated under other government regulations. NCIS was begun in 2008 and no information could be located to determine which or how many of the listed substances are still active on the South Korean market.

As of 2016, China's chemical inventory, IECSC, lists more than 45,000 substances. Included are all chemicals on the Chinese market, including polymers, regardless of the volume they are produced or imported. Excluded are pesticides, pharmaceuticals, cosmetics, food additives, naturally occurring substances, etc. (Please reference Appendix B16. for a complete list of exclusions). IECSC began in 2011 and is updated with new chemicals added to the Chinese market 5 years after the commencement of manufacture or import. A lack of English language translation is an impediment to using the database. No information could be located to determine which or how many of the listed chemicals substances are still active on the Chinese market

Countries in Central and South America have yet to adopt chemical management regimes, including inventories of chemicals on their markets. Thus, these countries cannot yet contribute to our knowledge about the number of chemicals in commerce. An apparent exception is Mexico, which began an inventory of chemicals in late 2011 and estimated it had 15,000 industrial chemicals on the market (no English language details to support this estimate could be found from the website of its Institute of Ecology and Climate Change). Columbia just published a draft decree that will, within one year, establish a register of industrial chemicals on the market, and within two years after that, put in place risk assessment and risk management processes.

The Russian Federation also maintains a register of potentially hazardous chemicals and biological substances. Unfortunately, it is only available in Russian and has not been translated into English. Purportedly, it includes data on properties of chemical substances and mixtures including information

on prohibition, restriction or permission in the territory of the Russian Federation. As of the end of 2016, the current register contains about 10,560 substances which were placed on the Russian market for the first time since 1992. It can be searched online by substance name (Russian), CAS# or EC number.

In October of 2016, Russia passed a new technical regulation for chemical product safety that will create an inventory based on the current register plus newly introduced substances. The new regulation does not come into force until July of 2021. Once the inventory is finalized, any new substances which are not listed on the inventory will require REACH-like notification before they can be placed on the Russian market.

In 2017, the Eurasian Economic Union (EEU includes Armenia, Belarus, Russia, Kazakhstan, Kyrgyzstan) adopted a Technical Regulation for chemical product safety. This technical regulation establishes uniform requirements for chemical products released into circulation in the EEU customs territory, as well as rules and forms for assessing its compliance, identification rules, requirements for terminology, labeling and application rules. The Eurasian Economic Commission, together with the governments of the EEU Member States, are expected to develop and approve the procedure for creating and maintaining the register of chemicals and mixtures of the EEU and the procedure for notifying new chemicals, ensuring their entry into force before December 1, 2018.

The preceding paragraphs summarized available estimates from single countries or regions.

From all of the estimates above, one can make a tentative estimate of the range of numbers of industrial chemicals in commerce, globally. To do so, some assumptions must be made about the amount of overlap between the chemicals produced and used between various regions and countries. It is unreasonable to assume that there is either 0% or 100% overlap, especially since as was noted in the GCO Report I, chemicals are increasingly being produced and traded globally. This is especially true of the 4,000-6,000 chemicals produced in the highest volumes.

A comparison of CAS#'s between the updated USEPA TSCA Inventory and EU REACH registrations found 61% overlap. Similarly, a comparison between the updated USEPA TSCA Inventory and substances on the Canadian DSL found 61% overlap. Because of limitations in the structure of the Japanese and Chinese inventory databases, it was not possible to make direct comparisons between them and the USEPA, EU and Canadian databases to determine the amount of overlap that exists. Thus, for purposes of making estimates of numbers of chemicals in commerce an assumption was made that there was 60% overlap in chemical identity amongst all of them.

If one uses the number of ECHA REACH registrations (N = 21,500), an analysis of the USEPA TSCA Inventory Update (N = 26,200), data available from the Canadian DSL (N = 19,500), Japan MOE's estimate (N = 12,000), and an analysis of China's IECSC (N = 35,700) after removing polymers, and assume a 60% overlap of industrial chemicals among them, and then adding 10% of that total to factor in possible unique chemicals from the rest of the world, yields an upper-bound estimate of approximately 60,000 unique chemicals in commerce globally. At the other extreme, using the same information solely from the number of ECHA REACH registrations, updated USEPA TSCA Inventory and Japan (adjusted for an assumed 60% overlap) and then adding 5% of that total for the rest of the world yields a lower-bound estimate of 40,000 industrial chemicals in commerce.

A sole focus on estimates of total numbers of chemicals in commerce ignores a key point that the vast majority of total annual volume of chemicals produced and sold is concentrated in a much smaller number of commercial chemicals. In his 2015 book *Chemicals without Harm, Policies for a Sustainable World*, Geiser estimated that 2,500 chemicals account for more than 95% of chemical volumes, globally. Reliable volume data are only available from the USEPA, ECHA REACH and Japan. Combining their data and again assuming 60% overlap in chemical identity among them yields an estimate of approximately 6000 chemicals that account for greater than 99% of the total volume produced or imported globally.

5. Perspectives on the Strengths and Limitations of this Study and of EHS Databases

The present study, and the databases themselves, enjoy some particular strengths, but also have some limitations which need to be thoroughly discussed and considered.

5.1 *Strengths of the Study and of EHS Databases*

One particular advantage of this study, that is also discussed as a limitation below, is its narrow focus on industrial chemicals in commerce. Although there continue to be significant concerns expressed about the impacts of chemicals in other sectors, e.g., chemicals used to control pests in agriculture and in and around domiciles, and with chemicals used to control microbial agents in a variety of settings, the reality is that pesticides and antimicrobials receive far greater scrutiny from regulatory agencies and, in general, there exists considerably more EHS information about them compared with industrial chemicals. As the production and uses of industrial chemicals has expanded during the past 50 years, and greater numbers of the public have had the potential for exposure to them, the gaps in our knowledge about their hazards and risks have garnered increasing attention from multiple stakeholders. By focusing more narrowly on industrial chemicals, this study contributes to the collective understanding of the types of EHS and regulatory information that is already publicly accessible and identifies priorities for further work to close the remaining gaps.

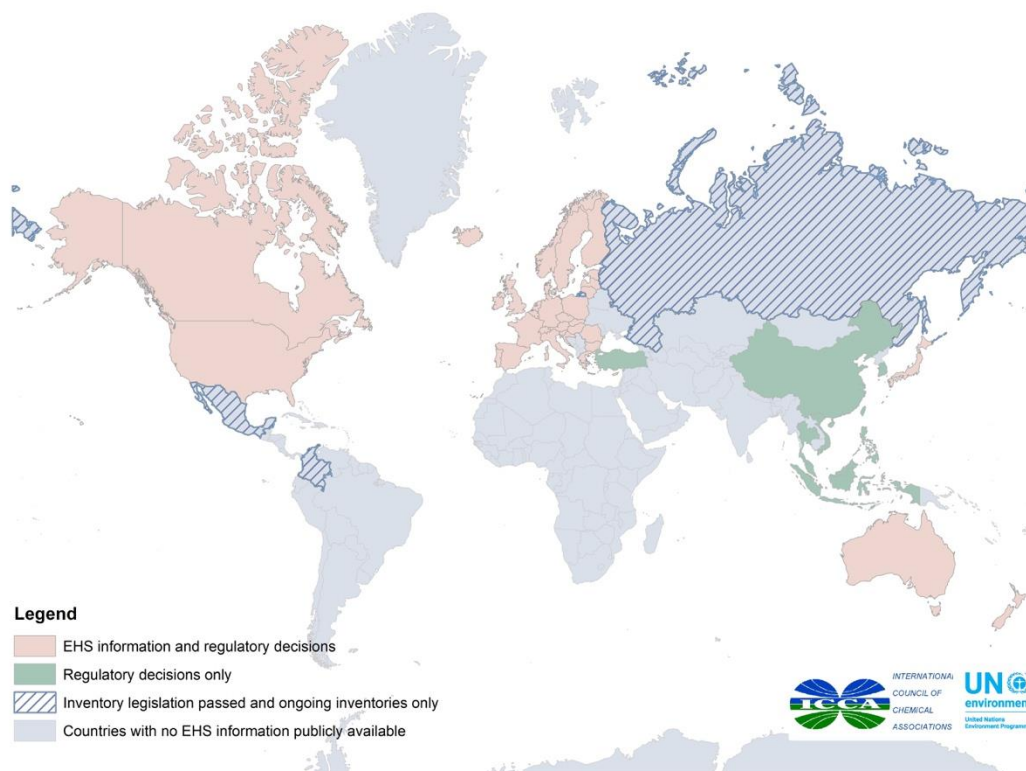
Another strength of this study is the comprehensiveness of the search for available EHS and regulatory databases that can be easily accessed by those seeking information on industrial chemicals. In addition to more conventional methods of searching (i.e., scouring the web using various search terms), suggestions were sought and received by the SAICM Secretariat from their extensive, geographically representative network of stakeholders which is composed primarily of national governments and NGOs. This substantially reduced the possibility of missing important data sources.

In fact, the study found links to more than 100 such EHS and regulatory databases and provides in-depth profiles for 41 of the largest and most comprehensive among them, including evaluations against pre-established quality criteria. The evaluations were carried out objectively using neutral narratives to highlight their strengths and potential opportunities for improvement.

These databases are operated by a mix of intergovernmental organizations (e.g., OECD, WHO, UN Environment, etc.), trading blocs (EU and Asean-Japan), individual countries, and NGOs. The breadth of geographic coverage of these databases is impressive, spanning nearly 50 countries spread across 4 continents. Figure 2 displays a map showing the sources of information available.

Figure 2

Publicly Available Environment, Health and Safety (EHS) Information Sources on Industrial Chemicals



Inventory – List of chemical substances that are manufactured or imported into a country or region, and used primarily to distinguish between new and existing chemicals. Inventory of chemicals that are used exclusively as pesticides, biocides or as active ingredients in human or veterinary medicines and not otherwise used for other purposes that would qualify them as industrial chemicals are excluded in this map.

The profiled databases represent the full spectrum of conventional EHS and regulatory information, including hazards, exposures and risks, to include some that offer newer read across, *in chemico*, *in vitro*, *in silico* tools and “high-throughput screening” and “high-content methods” (e.g. genomics, proteomics, metabolomics) to predict and evaluate hazards and risks more rapidly and economically than traditional animal-based testing can accomplish. Many of these tools and methods involve interpolation or extrapolation of data from chemicals that have undergone more traditional testing to structurally similar chemicals that haven’t been as thoroughly tested.

Some of the databases (e.g., EWG’s Skin-Deep, ChemSec’s SIN list, GoodGuide, USEPA’s Safer Choice Program, and those maintained by California’s DTSC) have been developed for the express purpose of promoting safer alternatives to existing chemicals considered as possibly risky for consumer exposures. Furthermore, several of them (e.g., EWG’s Skin-Deep, GoodGuide, National Library of Medicine’s Household Products database (accessible from TOXNET) and California DTSC) place their focus on increasing transparency of the identity and hazard characteristics of chemicals used in specific consumer

products. Other websites exist that also promote substitution to purportedly safer products, e.g., [SubSPort](#), [BASTA](#), [GreenScreen](#). These sites are referenced here (and in Appendix A) for readers who may be interested in learning more about them, but they were not included for analysis and evaluation in the current study because, although they offer potentially useful methods and tools for evaluating EHS characteristics of products, they do not provide searchable databases of EHS information on chemicals. More recently, a [Chemicals associated with Plastic Packaging database](#) has been announced “as a work in progress” and is the outcome of a collaboration between NGOs and research organizations in Europe and the US (The Food Packaging Forum; ChemTrust; ChemSec; University of Gothenburg; and Vrije University). It currently includes 148 substances ranked according to toxicity.

The combined effect of recently adopted legislation (e.g., EU-, Korea- and China- REACH, and the Lautenberg Chemical Safety Act) that requires manufacturers and importers to collect and publicly report hazard, use, exposure and risk information on their chemicals, the increasing focus on Green Chemistry, as well as the advent and acceptance of new tools and methods (e.g., read across, QSAR, “high throughput” and “high-content” screening), provides the best opportunity in decades to close the remaining gaps in our knowledge base about industrial chemicals.

The report is written primarily to serve the needs of someone who is seeking to find EHS and regulatory information on one or more specific chemicals of interest to them and aspires to be a helpful guide for locating and using publicly available information sources. Another priority for the study is to provide policymakers with some perspective on the extent of EHS information that is available and the gaps that remain.

5.2 The Knowledge Gaps, the Limitations of the study and of EHS Databases

One metric tonne is the limit most commonly used by regulatory agencies across the globe. Such a relatively small volume was based on the assumption that relatively few persons will be exposed to small volume of chemicals. However, this may not be essentially true about emerging chemicals such as nanomaterials whose threshold of their potential harms such as toxic concentrations are still under investigations and might be different from the same material in bulk form.

The estimate of number of chemicals in commerce and also analysis of the EHS sources compiled in this study do not account exclusively for the chemicals that are no longer manufactured or processed since ten years, chemicals produced above 1 tonne per annum that are used solely for product and process orientated research and development, non-isolated intermediates, isolated intermediates that are handled or transported under strictly controlled conditions, polymers (as defined under EU REACH), unintentional byproducts that are converted or treated on site under strictly controlled conditions and chemicals that are produced below 1 tonne per annum. Moreover, Individual Safety Data Sheets for chemicals in commerce were not analyzed as a source of EHS information for chemicals in commerce.

This chapter discusses the limitations of EHS databases, as well as the extent of available information and the existing knowledge gaps in regard to chemicals that are no longer manufactured for more than ten years, chemicals in products, nanomaterials, privately held information on industrial chemicals (Confidential Business information), combined exposure to multiple chemicals, risk management measures, other barriers to accessing and deploying EHS information, and estimation of number of industrial chemicals in commerce.

The current study and the analysis helped to identify certain unanswered questions in regard to chemicals in commerce which need a collective or separate research into each of these questions. Therefore, it is recommended to be the subject of future studies.

- What portion and how many chemicals on the market are hazardous, i.e. would need to be labelled according to the GHS?
- How many chemicals have complete risk assessments that have been prepared at the international or national levels?
- How many chemicals are on priority lists for potential phase out or severe restriction?

Currently there is limited coherent knowledge on each of these questions, because of the lack of a single, global repository for such information. This study has succeeded to compile and categorize the most comprehensive publicly available sources of EHS information which can facilitate the research into each of these knowledge gaps in future studies.

Limitation of EHS Databases

Certain gaps exist in EHS information available on specific industrial chemicals in commerce such as limited hazard information and lack of detailed toxicology information on a large number of these chemicals due to several factors such as: limited exposure to justify more extensive testing, the relatively high cost of some chronic toxicity tests, lack of advanced technologies or methodologies for risk assessment for certain chemicals (i.e. nanomaterials), the growing desire to reduce or replace animals used in testing, among many more. This is discussed more thoroughly by the scientists at the USEPA and was reported in 2012. As noted above, the gaps are shrinking with the implementation of EU REACH, Korea REACH, China REACH and new USEPA TSCA authority to more easily mandate that manufacturers generate data. Gap reductions are also likely to accelerate with increased adoption and acceptance of the *in vitro* and *in silico* predictive tools discussed above.

In general, the EHS databases included in this study provide findings predominantly from experimental toxicology studies and fewer results from human observational epidemiology studies. There are notable exceptions to this (e.g., IARC monographs, EU REACH dossiers, IRIS Assessments and others). The reasons for this are many and are often justified (e.g., epidemiology evidence is not feasible for newly introduced chemicals). Additionally, regulatory agencies around the globe admittedly have had difficulty assessing the quality and relevance of epidemiology evidence and integrating it with experimental evidence. However, in very recent years this has been changing with the adaption and use of systematic review and integration methods by [US](#) and [EU](#) regulators. It should be expected that epidemiology evidence will be more commonly reflected in EHS databases in the future.

Restricted and/or Banned Chemicals and the Chemicals Not Manufactured within the Past Ten Years

As mentioned above, while the focus on ‘industrial chemicals in commerce’ provides some advantages, it also presents some limitations. Foremost among them is that it can discount important public exposures via contaminated air, water and soil to chemical by-products, wastes, and chemicals which may have been restricted, banned or voluntarily phased-out in the past, and yet remain in the environment at levels of concern due to their persistence and bioaccumulation potential or because they remain in products that people come into contact with on a regular basis.

A time limit on production of industrial chemicals in commerce is necessary and the choice of ten years was largely dictated by the rules for EU REACH registration and the USEPA reset of the Toxic Substances Control Act (TSCA) Inventory. However, the ten-year limits the scope because it then excludes the specific exemptions for chemicals banned under the Stockholm Convention, yet their use or recycling of waste containing such chemicals is still allowed. A good example of the out of commerce chemicals for more than ten years is the commercial octabromodiphenyl ether (OctaBDE) listed in the Stockholm Convention for global elimination in 2009. However, OctaBDE was recently detected in toys available on the market in developing and developed countries, in products made of recycled plastic.

It should be noted, however, that many of the EHS databases included in this study do include information on hazards, exposures and risks associated with such chemicals. In fact, some of those chemicals and chemical families (e.g., brominated flame retardants such as OctaBDE, dioxins, furans, PCBs, Polycyclic Aromatic Hydrocarbons, etc.) are among the most thoroughly studied and characterized chemicals and EHS information about them is readily accessible from many of the databases that have been inventoried here. Even so, there remain important gaps in our knowledge about the hazards, exposures and risks posed by some of them.

Geographic and Languages Representation of EHS Databases

Despite the broad geographic representation highlighted above, some regions (notably India, countries in the Middle-East, Africa and Latin America) currently contribute little to no EHS or regulatory information. This is likely to change in the not too distant future as several important chemical manufacturing countries (e.g., China, Brazil, Russia, etc.) and others (e.g., Colombia) either have recently adopted or are planning to adopt more robust industrial chemicals management legislation and regulations. Even still, important gaps in our knowledge of how chemicals are used and of exposures, particularly in developing countries remain that need to be addressed by collecting such information. A study published in 2012 by EPA scientists also highlighted the need for better exposure information.

This study collected the EHS information sources and databases for which English language descriptions were available. Even though this study included and briefly profiled the databases from China and Russia that are not in English, the focus of the current study has been compiling the most comprehensive information on EHS available in English, as the stepping stone. Evaluation of the databases from China and Russia was hampered due to existing language barriers. In the case of China, some commercial consulting firms that offer companies regulatory services have made unofficial English translations of some materials and summaries of them are included along in this report with links to their websites. Moreover, a new website chemreg.net has recently been launched that has a searchable database of over 16,000 local regulations from 122 countries covering a wide range of scope and the owners have combined this with technologies that make it possible to search within the PDF files in any language, thereby effectively removing linguistic barriers and improving access.

Nevertheless, it would be useful in a future study, to inventory all the sources in UN languages rather than English (i.e. Arabic, Chinese, French, Russian and Spanish) and make them available to the public to ensure accessibility of information coming from different countries and regions. This future attempt will require the presence of a panel of experts with an excellent command of knowledge of the five UN languages in order to be able to conduct a thorough search and analysis of the EHS information available.

The study was also limited to EHS information sources that are accessible via the internet. It must be acknowledged that some areas of the world still have limited internet availability and for those who live there this can present a barrier to accessing the information.

The list of databases evaluated in the present study did not include sources of biomonitoring data⁶, e.g., US CDC's National Biomonitoring Program or EU's [COPHES and DEMOCOPHES](#), as it was judged that these data are likely to be very geographically-specific due to differences in local chemical use and exposure scenarios. As a consequence, the findings from those biomonitoring programs are not as generalizable to other contexts as compared to intrinsic hazard data which is more universally applicable. The weblinks to these databases have been provided above for those who may wish to explore their utility for their personal purposes.

Similarly, the current study did not emphasize chemical pollutant release and transfer databases, because again these data are likely to be very geographically specific and the data is not so easily extrapolated to other parts of the world. Moreover, advances in technology and emission measurement methods over time likely render the data difficult to compare. Nevertheless, several of the portals that have been included and profiled in the report do provide access to such databases. For example, the California DTSC's CIT includes links to multiple state, national and international pollutant and release databases, and both the USEPA's CHEMVIEW and the National Library of Medicine's TOXNET sites provide links to U.S. national data. The EU also maintains a similar web-based database called the European Pollutant Release and Transfer Register (E-PRTR).

Chemicals in Products

There is a growing need/concern over available EHS information on several categories of chemicals including but not limited to chemicals in products (e.g. with the priority focus made on children's products, cosmetic and cleaning products, feminine hygienic products). Those who seek EHS and safe use information about everyday consumer products are often frustrated by a lack of information available about the identity of specific chemical ingredients used in those products. Indeed, this is an emerging issue that is being worked on through the SAICM framework and the Chemicals in Products Program of UN Environment where activities focus on increasing the availability and access to the information actors need – throughout the life-cycle of products – so that they can properly manage those products and the chemicals in them.

At their current state, a majority of the existing databases with EHS information profiled in this study, require the users to search the specific chemical ingredients in a certain product to be able to find the EHS information, if such information exists for that specific chemical ingredient.

To address this current gap to some extent, the current study made an attempt to identify several of databases which provide information on chemical ingredients in products and also voluntary initiatives by certain consumer and personal product sectors, individual producers and retailers who are working toward increased disclosure of the chemical ingredients in their products. Nonetheless, there is room for more work and information sharing to address growing consumer demands for transparency.

The EWG's Skin-Deep database, GoodGuide, the National Library of Medicine's Household Products database (accessible via TOXNET) and California's DTSC's Candidate Chemical list may offer possible models for providing users access to the EHS information they seek on consumer products. Within the

⁶ The measurement of biomarkers of chemical exposure in human blood, hair, saliva or urine.

US, some states (e.g., [California](#), [Washington](#) and [New York](#)) have recently adopted laws requiring manufacturers of certain products to disclose ingredients on their websites. Additionally, certain consumer and personal product sectors, as well as individual producers and retailers have voluntary initiatives underway to increase transparency of the chemical ingredients they use as well as across their global supply chains (e.g., see American Cleaning Institute's [Consumer Product Communication Initiative](#), International Fragrance Association's [Transparency List](#), [Seventh Generation](#), [Reckitt Benckiser](#), [Henkel](#), [Walmart](#), [Target](#), [Clorox](#), [DowDupont](#), [P&G](#), [SC Johnson](#), [Unilever](#)). Globally, the trend toward increasing ingredient disclosure is growing rapidly based on consumer demand for healthier products and full ingredient disclosure.

Nanomaterials

In recent years, concerns have been growing about possible risks from exposures to nanomaterials. The term nanomaterials refers to materials that have at least one dimension (height, width or length) that is smaller than 100 nanometres (10^{-7} meter). This particular size dimension represents a major characteristic of manufactured nanomaterials (MNMs). The unique properties of MNMs may result in better performing products. However, for the same reason, MNMs may also present health hazards that differ from those of the substance in bulk form, and may require different test methods for hazard, exposure and risk assessment from their bulk material counterparts.

[As noted by WHO](#), there is currently a lack of precise information about human exposure pathways for MNMs, their fate in the human body and their ability to induce unwanted biological effects. Data from *in vitro*, animal and human MNM inhalation studies are available for only a few MNMs. So far, no long-term adverse health effects in humans have been observed. However, this could be due to the recent introduction of MNMs, the precautionary approach to avoid exposure and/or ethical concerns about conducting studies on humans. Health recommendations must, therefore, be based on extrapolation of the evidence from *in vitro*, animal or other studies from fields that involve exposure to nanoscale particles, such as air pollution, to the possible effects in humans. Workers who handle MNMs are likely to have the highest exposures, possibly placing them at increased risk for potential adverse health effects. Therefore, [the WHO recently promulgated guidelines](#) and has proposed them to policy makers and professionals in the field of occupational health and safety with recommendations on how best to protect workers from the potential risks of MNMs. The guidelines include an evaluation of EHS information that is presently available for approximately ten of the most commonly encountered MNMs. Even though, there is not yet a global registry specifically providing comprehensive information on nanomaterials, the EU has been developing an [Observatory for Nanomaterials](#) as well as [other activities under REACH to manage nanomaterials safely in accordance with REACH and the CLP Regulation](#) and to assess possible further legislative modifications.

Confidential Business Information (CBI) on Industrial Chemicals

Confidential Business Information (CBI) claims can present a barrier to public access to some EHS information, however, CBI is a complex and frequently misunderstood or mischaracterized topic.

The Dubai Declaration, paragraph 22, states that: “we will ensure that, when information is made available, confidential commercial and industrial information and knowledge are protected in accordance with national laws or regulations or, in the absence of such laws and regulations, are protected in accordance with international provisions. In making information available, information on

chemicals relating to the health and safety of humans and the environment should not be regarded as confidential.”

Nearly all stakeholders, including business and industry, believe that EHS information that is necessary to recognize and successfully manage risks should be publicly accessible. A key chemical safety principle agreed by all SAICM stakeholders and included in the SAICM CiP Programme is that health and safety information about chemicals should not be regarded as CBI. However, there is disagreement among broader audiences on whether certain details beyond merely a summary of that information can be legitimately claimed as CBI. For example, business and industry and governments believe that, under certain circumstances, some information, such as specific chemical formulations (including specific ingredients and their proportions in the formulated product) and the underlying EHS study reports (e.g., animal test data) represent substantial financial investments, have commercial value and should be afforded CBI protection in order to encourage innovation. Although such detailed information is made available to the regulatory agencies on a case by case basis, only general descriptors or summaries are available to the public. Some stakeholders object to this.⁷

Regulatory agencies across the globe have strict rules in place that are intended to discourage CBI claims except when they can be truly justified. All such claims are heavily scrutinized by authorities and many are rejected. Even when CBI is granted, regulatory agencies retain the authority and discretion to publicly disclose CBI information in cases where urgent action is essential to protect human health, safety or the environment, such as emergency situations. Chemical control regulators also readily provide such information to other national regulatory bodies, including foreign governments, so that they have access to it to fulfill their own responsibilities. For example, amendments to the Toxic Substances Control Act (TSCA) expanded the categories of people who may now access information claimed as confidential business information (CBI) under TSCA. Information that a business claims as CBI under TSCA is protected from disclosure until the business withdraws the CBI claim, until the CBI claim expires, until EPA determines that the claim is not entitled to confidential treatment, or as authorized under TSCA and EPA regulations.

TSCA allows EPA, under certain conditions, to disclose CBI to:

- state, tribal, and local governments;
- environmental, health, and medical professionals; and
- emergency responders.

USEPA has published its rules for claiming CBI under TSCA. Health and safety studies, information from health and safety studies, and certain other information may not be protected as CBI under TSCA. All claims of CBI must be substantiated by the manufacturer. Any non-exempt CBI claim that is submitted without a substantiation will be considered deficient, and USEPA will send a notice of deficiency to the affected business. The notice will inform the affected business that:

- it must submit its substantiation within 30 calendar days in order to remedy its deficient CBI claim; and
- if a timely substantiation has not been received by EPA within 30 days of receipt of the letter, any CBI claims not substantiated will be considered withdrawn, and the information may be made public with no further notice to the affected business.

⁷ A recent case is glyphosate (i.e. an active substance widely used in herbicides and its comprehensive re-evaluation on health risk assessment by the German Federal Institute for Risk Assessment (BfR)).

Although chemical identity can be claimed as CBI in some jurisdictions, chemical family must still be disclosed. CBI claims did not significantly inhibit the ability to estimate the numbers of industrial chemicals in commerce for this study, because even those chemicals for which CBI claims have been made are noted in the foundational databases (e.g., REACH and TSCA inventory) and can be enumerated.

Even when CBI has been claimed, there is still often useful EHS information publicly available for that chemical. For example, under EU REACH, even when CBI has been claimed, ECHA still has the legal obligation to make the following information publicly available:

- a. the name in the IUPAC nomenclature for substances fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008:
 - I. hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.15 types A to F;
 - II. hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10;
 - III. hazard class 4.1;
 - IV. hazard class 5.1;
 - V. if applicable, the name of the substance as given in EINECS;
 - VI. the classification and labelling of the substance;
 - VII. physicochemical data concerning the substance and on pathways and environmental fate;
 - VIII. the result of each toxicological and ecotoxicological study;
 - IX. any derived no-effect level (DNEL) or predicted no-effect concentration (PNEC) established in accordance with Annex I;
 - X. the guidance on safe use provided in accordance with sections 4 and 5 of Annex VI;
 - XI. analytical methods if requested in accordance with Annexes IX or X which make it possible to detect a hazardous substance when discharged into the environment as well as to determine the direct exposure of humans.

Combined Exposure to Multiple Chemicals

As was noted in the [Global Chemicals Outlook 2013 report](#), most existing EHS information sources are limited to presenting hazards and risks associated with exposures to single chemical substances or simple mixtures and ignore the real-world reality that people have combined exposures to hundreds or thousands of chemicals simultaneously. Evaluating health effects from mixed exposures is a very complicated topic, because it isn't practical or feasible to test all or even a few possible permutations of combined exposures.

At OECD, the Working Party on Hazard Assessment in collaboration with the Working Party on Exposure Assessment has launched a formal program of work on risk assessment from combined exposures to multiple chemicals. A project team was formed and conducted information gathering, collected case studies and has held discussions on problem formulation and scoping, hazard, exposure and risk assessment in the context of combined exposures. A document has been developed on considerations for problem formulation and scoping, hazard assessment, exposure assessment, and risk characterization of combined exposure to multiple chemicals. The document was published in December 2018 and is available on the [OECD website](#). The major conclusions are as follows.

“There are an infinite number of chemical combinations to which humans and the environment can be exposed. Ensuring that the individual chemicals are adequately assessed and managed is a critical component of ensuring protection of human health and the environment. However, it is also important to consider the impacts of combinations of these chemicals. This document has provided elements to consider when assessing combined exposure to multiple chemicals. Given the diversity of possible combinations, and the diversity of ways of prioritising their examination (e.g. based on uses, releases vs similar effect profiles), the elements have not been presented in a strict manner; the application of different approaches and methods will depend on the assessment context and the problem formulation. However, it is clear that a tiered approach should be applied in order to identify where additional resources should be targeted for the refinement of assessment approaches, further data generation or gathering, or the consideration of risk management activities.”

USEPA is required by statute to evaluate exposures under certain circumstances: aggregate, that is combined exposures to a single agent from multiple routes and multiple pathways; and cumulative, that is combined exposure to multiple stressors (chemical and non-chemical) via multiple exposure pathways that affect a single biological target. They have developed a thoughtful and [rigorous approach](#) that may be useful for others to consider when they are faced with combined exposure scenarios.

In the EU, in 2012 three prominent scientific committees of the European Commission (on Consumer Safety, on Emerging and Newly Identified Health Risks, and on Health and Environmental Risks) studied the issue of combined exposures and issued a [consensus report](#) entitled *Toxicity and Assessment of Chemical Mixtures* in which they concluded the following:

1. Under certain conditions, chemicals will act jointly in a way that the overall level of toxicity is affected.
2. Chemicals with common modes of action will act jointly to produce combination effects that are larger than the effects of each mixture component applied singly. These effects can be described by dose/concentration addition.
3. For chemicals with different modes of action (independently acting), no robust evidence is available that exposure to a mixture of such substances is of health or environmental concern if the individual chemicals are present at or below their zero- effect levels.
4. Interactions (including antagonism, potentiation, and synergies) usually occur at medium or high dose levels (relative to the lowest effect levels). At low exposure levels, they are either unlikely to occur or are toxicologically insignificant.
5. In view of the almost infinite number of possible combinations of chemicals to which humans and environmental species are exposed, some form of initial filter to allow a focus on mixtures of potential concern is necessary. Several criteria for such screening are offered.
6. With regard to the assessment of chemical mixtures, a major knowledge gap at the present time is the lack of exposure information and the rather limited number of chemicals for which there is sufficient information on their mode of action. Currently, there is neither an agreed inventory of mode of actions, nor a defined set of criteria how to characterize or predict a mode of action for data-poor chemicals.
7. If no mode of action information is available, the dose/concentration addition method should be preferred over the independent action approach. Prediction of possible interaction requires expert judgement and hence needs to be considered on a case-by- case basis.

Based upon the above conclusions, the authors of the report proposed a decision tree for evaluating the risk of chemical mixtures. Once again, others who are faced with having to address combined exposures may find this information helpful to them.

The [EU member states are considering](#) whether ECHA should develop a searchable database for EHS information on chemical mixtures. Presently, under EU REACH, importers and downstream users are obliged to submit information on hazardous chemical mixtures to "appointed bodies" in each of the member states where the products are marketed. This information is made available to poison centers for use in emergencies involving those mixtures. The portal could have various functionalities, in particular it could dispatch captured information to the relevant appointed bodies, or it could store the information, and make it available to those bodies using a searchable database. Such a database could create efficiency gains for member states by shifting responsibility to ECHA for the management of submitted data.

Risk Management Measures

Recommended risk management measures were not a particular focus of the current study, although they could be important to some information seekers, especially from developing countries. Fortunately, several of the databases (e.g., available from IPCS INCHEM, ICCA GPS Portal, and the databases which provide EHS regulatory decisions – see Table 3) do provide related information such as recommended exposure controls, restrictions on uses, and/or conditions for safe use.

Other Barriers to Accessing and Deploying EHS Information

Although the current study has identified and evaluated numerous EHS information sources and this should benefit stakeholders who have a need for such information, it does not address other barriers that may exist to accessing and deploying this information. It has been suggested that some stakeholders may not use such data because it wasn't generated locally and/or for other reasons related to a lack of trust. This report has tried to describe the quality of information available from each source without rating or ranking it. Each stakeholder will need to conduct its own quality assessment according to its own specific needs. Such assessments should be conducted objectively and without bias.

Estimating Numbers of Industrial Chemicals in Commerce

With respect to estimating the range of numbers of industrial chemicals in commerce, a variety of assumptions had to be made to compensate for a lack of verifiable data. The approach taken was to bracket the estimates by making two sets of assumptions, one of which was likely to err on the side of underestimating the count and the other which was likely to overestimate the count. Both sets of assumptions may be criticized on a number of grounds, but any alternative estimates that are offered by others will have to also make assumptions regarding the same missing parameters, i.e., degree of overlap in chemical identity between national/regional chemical inventories, absence of inventories for many parts of the world and uncertainty as to whether the inventories accurately reflect chemicals that are actually in commerce.

6. Conclusions and Recommendations

This report has been written primarily to serve the needs of those who are seeking to find EHS and related regulatory information on one or more specific chemicals of interest to them and aspires to be a

helpful guide for locating and using publicly available information sources. It also aimed at improving the knowledge on the number of chemicals in commerce globally.

Strengthening the objective on Knowledge and Information Sharing of the Strategic Approach to International Chemicals Management (SAICM), this report improves access to knowledge on chemicals.

- This report identifies, describes and evaluates the largest and most comprehensive publicly available EHS information sources existing primarily in English, which has never been done before and will thereby improve access to the widest range of information for those who seek such information on industrial chemicals in commerce.

Of the more than 100 databases identified for analysis, forty-one make available EHS information and/or EHS-type regulatory decision information on industrial chemicals in commerce, including databases developed and maintained by inter-governmental organizations, regional groups, national governments and NGOs.

Each of the databases was classified into one of three distinct categories: (1) information portals that provide users the ability to simultaneously search multiple, third-party owned and managed EHS databases; (2) single, primary sources which provide access to EHS information on chemical substances; and (3) single, primary sources which provide access to EHS-type regulatory decisions made about chemical substances.

- The report offers information seekers with a strategy to make their searches for EHS information more efficient and productive.
- The quality criteria and differentiation of these databases on the basis of these criteria will help users to more readily find the EHS information that is relevant to their specific needs. The quality criteria included: scope of chemicals addressed, ease of access and use, breadth and depth of EHS information available, quality of the underlying information and procedures to update that information.

The seven information portals reviewed (the OECD eChemPortal, IPCS INCHEM, California DTSC's CIT and TIC, the ICCA GPS Chemical Portal, AJCSD, and TOXNET) provide users with the capability of searching many disparate individual EHS information sources (collectively >100) simultaneously, thereby increasing global reach, scale and efficiency. Such portals represent a helpful starting point for those who need a quick overview of what information might be available on a particular chemical substance. However, users should be cautious with interpreting and applying the output of their searches from these portals and must first consult the websites of the individual third party sources to fully understand the strengths and limitations of the underlying information.

The scope of the evaluated databases varies markedly. All of them were found to be easily accessed and used, although some sources provide published user guides to more easily facilitate basic and advanced searches. Breadth and depth of information vary considerably ranging from simple chemical identity and basic regulatory decisions to more detailed hazard, exposure and risk assessments and everything in between. The quality of the underlying EHS information also varies somewhat, but was generally considered to be good when judged against the pre-established criteria.

Twenty-four single, primary sources of EHS information were reviewed. Of those 24 databases, ECHA's CHEM, which provides EHS information on the 21,200 plus unique chemicals registered to meet EU REACH obligations, is the most comprehensive and should be among the first searched by users who seek both mammalian and environmental hazard, use, exposure, risk assessment and risk management information. It can be accessed directly or via several of the portals discussed above. Substantial hazard, use/exposure and risk information is available for chemicals at or above 1000 metric tonnes. Somewhat less information is available for lower volume substances, and substances below 10 metric tonnes have reduced information requirements (see Table B1). Even so, ECHA requires and makes publicly available an assessment of the risks of exposure for a full range of uses and exposure scenarios.

Ten databases (ECHA's Substances Restricted Under REACH List and Candidate SVHC List, Canada's Categorization Results, California DTSC Candidate List, USEPA's SRS, South Korea's NCIS, Australia's AICS, New Zealand's HSNO Register and NZIoC, and China's IECSC) provide EHS-type regulatory decisions on specific chemicals. They do not provide users with EHS information per se, but instead they provide key decisions that when combined with knowledge of the regulatory criteria used to make those decisions, give users insight as to how other governments view those chemicals and are taking regulatory actions to further investigate and manage the risks they pose to human health and/or the environment. Of those ten, Canada's Categorization Results database may be the most relevant for many users because it presents regulatory decisions on all 23,000 plus chemical substances identified as being in commerce in Canada. Many governments around the world continue to be challenged with characterizing the hazard and risks of chemicals and the results of Canada's efforts can possibly be leveraged by them for their own purposes.

- The report provides help to those who are looking for alternatives to more hazardous and risky chemicals by including several databases which focus on that goal. It also provides information on databases that are of interest for the Chemicals in Products programme of UN Environment.

Some of the databases reviewed (e.g., EWG's Skin-Deep, ChemSec's SIN list, GoodGuide, USEPA's Safer Choice Program, and those maintained by California's DTSC) have been developed for the express purpose of promoting safer alternatives to existing chemicals considered as possibly too hazardous or risky for consumer exposures. Furthermore, at least four of them (e.g., EWG's Skin-Deep, GoodGuide, National Library of Medicine's Household Products database (accessible from TOXNET) and California DTSC) place their focus on increasing transparency of the identity and hazard characteristics of chemicals used in specific consumer products.

- The report describes the various procedures that exist to validate the quality of EHS information, which helps juxtapose existing standards with opportunities for improvement of procedures and transparency globally.

Most governmental organizations provide for some type of peer review and solicit and incorporate public comment on their work, whereas the NGO databases, and the ICCA GPS Portal, do not include an external peer review process. About half of the sources of databases provide adequate descriptions of their procedures for keeping the information up to date. A few databases are intentionally static, with no intent to update the information they contain, and so users need to exercise caution when referencing information that is available from them.

- The report describes the latest tool developments and opportunities for alternatives to generating EHS knowledge which can more quickly and inexpensively close EHS information gaps and also supports further research and innovation in this area.

EPA's ACToR database is unique and distinct among the twenty-four primary EHS information sources because it is focused on helping users predict toxicity of a chemical substance that currently lacks mammalian and eco-toxicity data. Databases such as ACToR, and the suite of new tools and methods available from them, will likely gain increasing use in the next few years and offer great promise for rapidly closing remaining information gaps.

- The description and information on the scope, strengths, and limitations of each database will inform policy makers on how such databases on chemicals have been developed and how they are fit for purpose, which can support further developments in chemicals management policies at the national and global level. It will assist:
 - authorities in developing countries to access to EHS information on a wide range of industrial chemicals in commerce for use in GHS implementation;
 - to develop strategies for gathering local use and exposure information critical for conducting risk assessments and prioritizing chemicals for further risk management;
 - those who wish to pursue more complete EHS data sets to know where to find the most comprehensive information that is available and to identify remaining data for prioritized action to close them.
- This study provides policy-makers with sources of EHS information to assist their discussions on specific chemicals and chemical classes identified as concerns to SAICM (e.g., brominated flame retardants, perfluorinated chemicals, and others).

In addition, the report confirms that many gaps in EHS information have been reduced since the inception of SAICM in 2006. While nearly half of the 24 primary sources of EHS information pre-date the inception of SAICM in 2006, the largest and most comprehensive of them (e.g., The ECHA CHEM, USEPA CHEMVIEW and ACToR, Canadian Screening Level Assessments, Australia IMAP, EWG Skin-Deep, ChemSec SIN List and GoodGuide databases were clearly established during the post SAICM era were developed post-SAICM.

- The report further highlights policy and knowledge gaps, most notably on the number of industrial chemicals in commerce.

The estimated range found in this study is 40,000-60,000. These estimates vary based on the assumptions made about the degree of overlap between the chemicals produced and used across the globe. The main difficulties identified with enumerating the numbers of industrial chemicals in commerce and with comparing various competing estimates are discussed in the report and include: a lack of inventories of chemicals for many countries, uncertain and variable definitions of what's included under the rubrics of chemicals and even "industrial chemicals", varying volume thresholds for reporting, uncertainty as to whether chemicals initially notified to various governments still remain on the market, whether new chemicals notified since then were even ever brought to the market, duplicates, chemical identity being claimed as CBI, and unintended incentives for companies to over-report.

Not to be overlooked is a key fact that the vast majority of the total volume of production and sales is concentrated in a much smaller subset. Indeed, it is estimated that 6000 chemicals account for greater than 99% of the total volume produced and traded globally.

6.1. Recommendations

All stakeholders may wish to quantify the size of the gaps in the EHS data and knowledge that exist for industrial chemicals in commerce. Such data and knowledge are critical to assessing chemicals to identify their potential hazards and risks so that they can be managed to protect human health and the environment.

Stakeholders also may wish to know whether enough is being done to prioritize the subset of chemicals that pose the greatest potential risks so that appropriate actions can be taken. Although individual national and regional government authorities are trying to identify and fill the gaps that exist, and while there are efforts underway globally to try to coordinate these efforts to avoid duplication and increase efficiency, there currently is no central repository for EHS information on chemicals in commerce. This is a barrier to advancing collective understanding of the scope and size of the problem.

One recommendation for future studies could be investigating the pressing gaps that exist in EHS information available on specific industrial chemicals in commerce such as for a group of chemicals considered as high priority (e.g. widely used chemicals in consumer products). A logical next step could be envisioned by selecting a statistically meaningful, random sample of chemical substances from one of the larger chemical inventories, e.g., USEPA TSCA and compare them against the EHS databases identified by this study to determine the percentage of chemicals that have information available, and the breadth, depth and quality of that information.

This study provided a comprehensive review of publicly accessible repositories of EHS information on chemicals in commerce which can act as a stepping stone for future research and studies into addressing several existing knowledge gaps in regard to chemicals in commerce such as (i) the number of hazardous chemicals on the market which would need to be labelled according to the GHS; (ii) the number of chemicals with complete risk assessments that have been prepared at the international or national levels; (iii) the number of chemicals that are on priority lists for potential phase out or severe restriction.

The chemical sector through several global initiatives and programmes on product stewardship (e.g. ICCA's Global Product Strategy, hazard identification and risk assessment trainings to build capacity, and its Responsible Care Programme) has been working toward the sound management of chemicals during the use and the end-of-life of chemicals. These efforts have identified that while the gaps in information on hazards have been shrinking, gaps in knowledge on chemicals uses and exposure scenarios persist. Global Chemical Outlook (GCO-II) discusses this topic in detail and introduces the sources of information on exposure. There is a gap in our knowledge and understanding on the exposure to the chemicals that have been phased-out or banned (i.e. legacy chemicals). Although there may be extensive hazard and risk information on these chemicals in existing EHS databases, as has been described in this study, exposure to these chemicals still can take place through unexpected pathways such as contamination of recycled products. This underscores a need to investigate the occurrence and levels of these type of

chemicals in recycled products and conduct exposure and risk assessments to ensure adequate protection of human health and the environment.

This study introduced multiple ongoing initiatives and databases which aim to share information with the public on chemicals used in consumer products. While these efforts are currently somewhat narrow in scope, the trend is toward greater transparency and fuller disclosure of ingredients due to public interest and demand. Consideration should be given to creating a central, comprehensive database (or several databases) to more easily facilitate consumer access to hazard, exposure and risk information on the chemical ingredients used in the products they purchase and use, perhaps with emphasis on children's products, cosmetic and cleaning products, and feminine hygiene products.

This study aims to inform information seekers on EHS and regulatory information on industrial chemicals and aspires to be a helpful guide for locating and using publicly available information sources. As a result, a next step for a deeper outreach with a broader audience, in particular consumers, could be to: publish a summary in the scientific, peer-review literature; and to develop media content such as a policy summary and/or a user-friendly web-based display of the EHS databases discussed in this study.

Appendix A: Other Databases/Websites Identified by Various Stakeholders for Analysis

Database/Website	Brief Description	Reason for Exclusion
https://www.subsport.eu	SUBSPORT is a free-of-charge, multilingual platform for information exchange on alternative substances and technologies, as well as tools and guidance for substance evaluation and substitution management.	Does not provide EHS information on industrial chemicals in commerce.
http://www.bastaonline.se/about-basta/about-basta/?lang=en	BASTA is a system for anyone who wants to make conscious product selections with the aim of phasing out substances of concern – for example building owners, contractors, architects, structural engineers or individuals.	Does not provide EHS information on industrial chemicals in commerce.
http://www.greenscreenchemicals.org/certified	GreenScreen® for Safer Chemicals is a method for chemical hazard assessment designed to identify chemicals of high concern and safer alternatives.	It is a methodology rather than an EHS information source on industrial chemicals in commerce.
http://webprod.hc-sc.gc.ca/nhp/nd-bdipsn/search-rechercheReq.do	The Natural Health Product Ingredient Database provides an electronic tool which enables members of the public to access information on acceptable medicinal and non-medicinal	The scope of chemicals covered by this database is outside that of the study which focuses on industrial

Database/Website	Brief Description	Reason for Exclusion
	ingredients used in Natural Health Products (NHP)	chemicals in commerce.
https://www.canada.ca/en/health-canada/services/drugs-health-products/natural-non-prescription/applications-submissions/product-licensing/licensed-natural-health-products-database.html	The Licensed Natural Health Products Database contains information about natural health products that have been issued a product license by Health Canada.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.
https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/drug-product-database.html	The Drug Product Database (DPD) to find drugs authorized for sale by Health Canada.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.
https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/food-additives/lists-permitted.html	The Lists of permitted food additives are Health Canada's official repository of substances that are permitted for use as additives in or on foods marketed in Canada.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.

Database/Website	Brief Description	Reason for Exclusion
http://pr-rp.hc-sc.gc.ca/pi-ip/index-eng.php	The Pesticide Product Information Database was developed to allow interested members of the public to browse information on specific products, active ingredients, or programs related to pesticides that are regulated by Health Canada.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.
http://www.cosmostox.eu/home/welcome/	COSMOS is a European Union project developing methods for determining the safety of cosmetic ingredients for humans, without the use of animals, using computational models.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.
https://www.umweltbundesamt.de/en/portal/pop-dioxins-database-of-the-german-federation	This site provides detailed information on persistent organic pollutants (POP) and explains the scientific background and criteria for evaluation of these pollutants. Site also features reports on these toxins as they pertain to the environment and health as well as a database with the conclusive results of tests.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.

Database/Website	Brief Description	Reason for Exclusion
https://www.umweltprobenbank.de/en	The long-term storage of environmental and human specimens is regarded as the main task of the German Environmental Specimen Bank: The Environmental Specimen Bank provides a continuous historical record of the state of the environment in Germany.	This database of tissue specimens was judged to be too geographically specific (i.e., to Germany) to include in the analysis.
https://www.umweltbundesamt.de/en/database-pharmaceuticals-in-the-environment-0	In a comprehensive literature review of 1016 original publications and 150 review articles, the German government compiled measured environmental concentrations of human and veterinary pharmaceutical residues reported worldwide in surface water, groundwater, tap/drinking water, manure, soil, and other environmental matrices in a systematic database.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.
http://canais.abiquim.org.br/braz_new/	ABIQUIM, the Brazilian chemical industry association, maintains a database of chemical products that are produced or imported by its members.	No English language description could be found of the scope or methods by which the database was compiled or maintained.

Database/Website	Brief Description	Reason for Exclusion
https://rifmdatabase.rifm.org/rifmweb/	The RIFM Database is the most comprehensive, worldwide source of toxicology data, literature and general information on fragrance and flavor raw materials.	The scope of chemicals covered by this database is outside that of the study which focuses on industrial chemicals in commerce.
http://scorecard.goodguide.com/chemical-profiles/	Scorecard provides detailed information on more than 11,200 chemicals, including all the chemicals used in large amounts in the United States and all the chemicals regulated under major environmental laws.	This database was judged to be redundant with information available from USEPA's CHEMVIEW database.

Appendix B: Narrative Description and Evaluation of EHS Information

Sources

This section of the report presents narrative descriptions of each of the EHS information sources that met the criteria for inclusion. Evaluation of the source compared to the quality criteria described above is preceded by an overview/description of that source.

B1. OECD eChemPortal

The information presented below represents a summary of key information about the EHS information on industrial chemicals that is available from the Organisation for Economic Co-operation and Development's (OECD) [eChemPortal](#) – "The Global Portal to Information on Chemical Substances". For more detailed information, the reader should consult directly with the [OECD website](#).

The reader should also be aware that several of the most comprehensive data sources contributing information to the eChemPortal (e.g., ECHA CHEM, US EPA IRIS, OECD SIDS, etc.) are reviewed in greater detail in subsequent sections of this report.

B1.1. Overview/Description

First launched in 2007, [eChemPortal](#) provides free public access to information on chemical properties and direct links to collections of information prepared for government chemical review programs at national, regional, and international levels. Access to information on existing chemicals, new industrial chemicals, pesticides and biocides is provided. eChemPortal also makes available national/regional classification results according to national/regional hazard classification schemes or according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). In addition, eChemPortal also provides exposure and use information on chemicals.

There are currently 34 databases participating and contributing information to eChemPortal. Each database is owned and managed by a separate organization with contributions from the governments of Australia, Canada, the European Union, Finland, France, Germany, Japan, New Zealand, the Nordic countries, United Kingdom and the United States, in addition to several international entities (e.g., OECD itself, UN Environment, World Health Organization and others).

eChemPortal provides links to individual websites for each of these databases as well as descriptions of the databases and review of data stored in them. The portal website also includes links that lead to existing scheduling information of national/regional and international assessments notified to the OECD by OECD member countries and stakeholders. They are provided with the aim to assist governments in avoiding duplication across national/regional programs in the area of chemical assessment.

The main objectives of eChemPortal are to:

- 1) make this information on existing chemicals publicly available and free of charge;
- 2) enable quick and efficient use of this information; and

3) enable efficient exchange of this information.

Though the eChemPortal web site is written in English, it can be searched by chemical names or synonyms in several languages (Czech, Danish, Dutch, French, German, Greek, Italian, Japanese, Korean, Portuguese, Slovak and Spanish).

The stated vision for eChemPortal is as follows: “eChemPortal maximizes access to information on chemicals for all stakeholders for whom such information is critical, regulators and industry, and benefits academics, international organizations and the general public - regardless of geography or purpose.

The OECD and its member countries are dedicated to protecting human health and the environment by promoting chemical safety worldwide. eChemPortal is a key OECD tool supporting this work. For all stakeholders, including in developing countries, eChemPortal will be the key tool for finding information to support health and environment decisions concerning chemicals.

eChemPortal aims to be the global Internet portal that provides free easy access to all existing information of regulatory relevance on chemicals by linking directly to collections of information prepared for government and international organization chemical programmes at national, regional, and international levels.

eChemPortal will expand the ability of governments to efficiently access information in order to share the burden of work, ensure resource efficiencies, and avoid duplication of work on assessment and, subsequently, reduce animal testing.

eChemPortal can help transform data into knowledge by encouraging users to build knowledge sharing communities around eChemPortal.

To facilitate the sharing of chemical data, eChemPortal was implemented using the common electronic data formats prescribed by the OECD Harmonized Templates for Reporting Chemical Test Summaries. This facilitates linking to databases with structured chemical property data also implemented according to the OECD Templates. eChemPortal was developed with the financial assistance of the European Chemicals Agency (ECHA) and has benefited from the contributions of governments, international organizations, non-governmental organizations and the chemical industry.

OECD is responsible for the development of the Portal itself. The data sources linked to eChemPortal are maintained by the participating organizations that create them. Each participating organization is responsible for the software and hardware running locally and interfacing with the Portal. The data and information stored in each participating data source are the responsibility of the data owner.

ECHA is responsible for the hosting of eChemPortal.

Proposals for linking new sources of data to eChemPortal can be made by any stakeholder represented at the OECD Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology. The decisions on proposed extensions will be taken by the OECD Working Party on Hazard Assessment.

OECD actively encourages additional participation. Certain obligations come with participation.

B1.2. Scope of Chemicals Addressed

The scope of eChemPortal includes existing chemicals, new industrial chemicals, pesticides and biocides.

As of 4 June 2018, eChemPortal reports being able to access 683,634 substance records (not unique substances), 1,136,073 data endpoint records and 33,727 classification records. Four of the databases contribute EHS data endpoint records: CCR (Categorization Results from the Canadian Domestic Substance List), ECHA CHEM (ECHA's dissemination portal with information on chemicals registered under REACH), J-CHECK (Japan's Chemicals Collaborative Knowledge Database), and OECD SIDS (Existing Chemicals Screening Information Data Set Database). Two of the databases contribute reviewed GHS classifications: ECHA C&L inventory (Public C&L Inventory according to the EU CLP Regulation (EC) No 1272/2008)) and GHS-J (GHS Classification Results by the Japanese Government).

B1.3. Ease of Access and Use of Chemical Information

eChemPortal allows searches not only by substance name and identification number but also by chemical property. Users can select specific search criteria for chemical endpoint properties. As with the search by substance, search results offer links to the complete data set in the participating data sources' local systems. In order to provide this search, data sources submit and eChemPortal stores property data in the OECD Harmonized Template format.

A search by GHS classification was added to eChemPortal in 12 June 2015. This search allows users, for an individual chemical, to view GHS classifications which have undergone a review by a regulatory body or intergovernmental organization and offers direct links to the full information in the participating data sources.

Detailed guidance is available for those wishing to search the eChemPortal database.

B1.4. Breadth and Depth of EHS Information Available

The breadth and depth of EHS information available at eChemPortal varies considerably based on the contributing data source and substance being queried. Generalizing somewhat, extensive EHS data are available for pesticides, biocides, high volume chemicals and those chemicals that have been produced and used for longer durations and have been subject to more intensive government agency scrutiny based on their uses/exposures and suspected hazard properties.

Raw data measuring the properties of chemicals (physical chemical properties, environmental fate and behavior, eco-toxicity, and mammalian toxicology) from a full range of tests and models (e.g., Quantitative Structure Activity Relationships (QSR), computational toxicology methods, etc.) are available, as well as robust summaries of those data, hazard and exposure characterizations and risk assessments. eChemPortal also provides access to national/regional classification results according to national/regional hazard classification schemes or according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). In addition, eChemPortal provides also exposure and use information on chemicals.

A clear advantage of eChemPortal is that it can provide the user with rapid access to the full gamut of EHS information that is available on a particular substance from governments operating across a wide swath of the developed world.

B1.5. Quality of the Underlying EHS Information

In general, eChemPortal provides access to information that has been submitted to government chemical review programs. The data and information stored in each participating data source are the responsibility of the data owner. OECD cannot guarantee the correctness of the data and provides explicit warnings that it cannot be held responsible or liable for errors.

eChemPortal provides descriptions of the sources and of the peer review that the data has undergone on the pages describing each participating data source. Most governments have extensive procedures in place to assure the quality and reliability of the information they rely upon for making chemical safety assessments; however, users of the information should confirm the robustness of those procedures by checking with the relevant sources.

B1.6. Procedures for Updating the Database with New Information

Different data sources in eChemPortal use different methods to maintain and provide updates of their data with new information.

The methods vary from an automatic update via the Internet, semi-automatic update via the Internet, to a manual import of data files, depending on participating data source resources and the frequency of updates. Users are urged to consult with the individual participating data sources if they need to be assured that they have the most up-to-date information on a substance.

B2 International Programme on Chemical Safety (IPCS)

The information presented below represents a summary of key information about the EHS information on industrial chemicals that is available from the IPCS INCHEM Portal. For more detailed information, the reader should consult directly with the IPCS INCHEM website at <http://www.inchem.org/pages/about.html>.

The International Programme on Chemical Safety (IPCS) is a cooperative venture of the World Health Organization (WHO), the International Labour Organisation (ILO), and the United Nations Environment Programme (UN Environment). The central unit for IPCS is located at WHO in Geneva.

The IPCS was established following the international concern about chemicals expressed at the United Nations Conference on the Human Environment in 1972 and in response to the resolution of the World Health Assembly. It was set up to provide international assessments of the risks to health and the environment of chemicals and to strengthen capabilities and capacities in countries for sound management of chemicals.

The main objective of the IPCS is to carry out and disseminate evaluations of the effects of chemicals on human health and the quality of the environment. Supporting activities include the development of epidemiological, experimental laboratory, and risk-assessment methods that could produce internationally comparable results, and the development of manpower in the field of toxicology. Other activities carried out by the IPCS include the development of know-how for coping with chemical accidents, coordination of laboratory testing and epidemiological studies, and promotion of research on the mechanisms of the biological action of chemicals.

IPCS INCHEM was produced in order to consolidate relevant data on chemical information which are available from international bodies. It is a portal that provides a means of rapid access to information on chemicals commonly used throughout the world, which may occur as contaminants in the environment.

B2.1. Overview/Description

The United Nations Conference on Environment and Development (UNCED), held in 1992, elaborated strategies and measures to increase national and international efforts to promote sustainable and environmentally sound development in all countries. Environmentally sound management of chemicals was one of the issues where an international strategy was elaborated, and six programme areas were proposed for strengthened national and international efforts, including information exchange on toxic chemicals and chemical risks.

Among the recommendations of UNCED was that the collaboration between WHO, ILO and UN Environment on the IPCS should be the nucleus for strengthened international cooperation and that an intergovernmental mechanism for risk assessment and management of chemicals should be established.

In response to these recommendations, a mechanism for strengthened collaboration among international programmes has been set up through the Inter-Organization Management Committee (IOMC), in which the three IPCS Collaborating Organizations WHO, ILO and UN Environment have joined with the Food and Agriculture Organization of the United Nations (FAO), the United Nations Industrial Development Organization (UNIDO), and the Organization for Economic Co-operation and Development (OECD). Further, an Intergovernmental Forum on Chemical Safety (IFCS or the Forum) has been established as a mechanism for cooperation among governments for promotion of risk assessment and sound management of chemicals.

One of the recommendations of the IFCS in relation to information exchange on toxic chemicals and chemical risks was that relevant data from international bodies should be consolidated, if economically feasible, by 1997 on CD-ROM or other appropriate electronic media, together with suitable searching and updating facilities. As of this writing, IPCS provides a portal for searching for EHS information from 13 separate databases which are described further below.

B2.2. Scope of Chemicals Addressed

The scope of chemicals addressed by IPCS INCHEM is very broad and includes chemicals commonly used throughout the world, which may occur as contaminants in the environment. Thus, it includes: industrial chemicals, biocides, pesticides and other substances.

B2.3. Ease of Access and Use of Chemical Information

The IPCS INCHEM is available on CD-ROM and [online](#). The CD-ROM and the website have been developed with the cooperation of the Canadian Centre for Occupational Health and Safety (CCOHS) and as a result of financial support from a number of donors to the IPCS, particularly the governments of Canada, Netherlands, Norway and the United Kingdom.

IPCS INCHEM offers quick and easy electronic access to thousands of searchable full-text documents on chemical risks and the sound management of chemicals, helping countries fulfill their commitments under UNCED's Agenda 21, Chapter 19.

Searches may be done for all of the participating databases at once or by specifying individual databases. The search tool is quite powerful and flexible using the Verity Query Language to find the information users may be looking for. [The Quick Reference Card](#) starts with an overview of searching options and moves from simple searches using a single word or phrase to more complicated searches using many search terms. Many examples are available as an aid for users to formulate their own searches.

[A more in-depth guide](#) is available for those who want to conduct more advanced searches.

B.2.4. Breadth and Depth of EHS Information Available

(For ease of presentation, the information pertinent to sections B.2.4, B.2.5 and B.2.6 have been combined below)

B.2.5. Quality of the Underlying EHS Information

(See below)

B.2.6. Procedures for Updating the Database with New Information

IPCS INCHEM provides access to the following sources of EHS information on chemicals.

- Concise International Chemical Assessment Documents (CICADS)
- Environmental Health Criteria (EHC) Monographs
- Harmonization Project Publications
- Health and Safety Guides (HSGs)
- International Agency for Research on Cancer (IARC) — Summaries and Evaluations
- International Chemical Safety Cards (IFCS)
- IPCS/CEC Evaluation of Antidote Series
- Joint Expert Committee on Food Additives (JECFA) — Monographs and Evaluations
- Joint Meeting on Pesticide Residues (JMPR) — Monographs and Evaluations
- Kemi-Riskline
- Poisons Information Monographs (PIMs)
- Screening Information Data Sets (SIDS) for High Production Volume Chemicals
- UK Poison Information Documents (UKPID)

EHS information available from each of these 13 sources are described below.

B.2.6.1. Concise International Chemical Assessment Documents (CICADS)

CICADS represent the latest in a family of publications from IPCS and join the Environmental Health Criteria documents (EHCs) as authoritative documents on the risk assessment of chemicals. They are available for approximately 80 chemicals or chemical families.

CICADs are concise documents that provide summaries of the relevant scientific information concerning the potential effects of chemicals upon human health and/or the environment. They are based on selected national or regional evaluation documents or on existing EHCs. Before acceptance for publication as CICADs by IPCS, these documents have undergone extensive peer review by internationally selected experts to ensure their completeness, accuracy in the way in which the original data are represented, and the validity of the conclusions drawn.

The primary objective of CICADs is characterization of hazard and dose-response from exposure to a chemical. CICADs are not a summary of all available data on a particular chemical, rather, they include only that information considered critical for characterization of the risk posed by the chemical. The critical studies are, however, presented in sufficient detail to support the conclusions drawn. For additional information, the reader should consult the identified source documents upon which the CICAD has been based.

Risks posed to human health and the environment will vary considerably depending upon the type and extent of exposure. Responsible authorities are strongly encouraged to characterize risk on the basis of locally measured or predicted exposure scenarios. To assist the reader, examples of exposure estimation and risk characterization are provided in CICADs, whenever possible. These examples cannot be considered as representing all possible exposure situations, but are provided as guidance only.

While every effort is made to ensure that CICADs represent the current status of knowledge, new information is being developed constantly. Unless otherwise stated, CICADs are based on a search of the scientific literature to the date shown in the executive summary. In the event that a reader becomes aware of new information that would change the conclusions drawn in a CICAD, the reader is requested to contact the IPCS to inform it of the new information.

B.2.6.2 Environmental Health Criteria (EHC) Monographs

EHC publications are monographs containing comprehensive data from scientific sources and are designed for scientists and administrators responsible for the establishment of safety standards and regulations. This series issued by the International Programme on Chemical Safety (IPCS), provides basic scientific risk evaluation of a wide range of chemicals, groups of chemicals, biological and physical agents. EHC monographs are available on approximately 200 agents and a further 20 or more EHC's are written to address various methodological issues in hazard characterization and risk assessment.

EHC monographs are based on a comprehensive search of available original publications, scientific literature and reviews and examine: the physical and chemical properties and analytical methods; sources of environmental and industrial exposure and environmental transport, chemo-biokinetics and metabolism including absorption, distribution, transformation and elimination; short and long term

effects on animals (carcinogenicity, mutagenicity, and teratogenicity); and finally, an evaluation of risks for human health and the effects on the environment.

The EHC series are published by the WHO and hard copies can be obtained from the Office of Distribution and Sales, World Health Organization, 1211 Geneva 27, Switzerland.

B.2.6.3. Harmonization Project Publications

The WHO/IPCS Project on the Harmonization of Approaches to the Assessment of Risk from Exposure to Chemicals ("Harmonization Project"), aims to harmonize global approaches to risk assessment by:

- increasing understanding and agreement on basic risk assessment principles
- developing international guidance documents on specific issues.

The Project enables risk assessments to be performed using internationally accepted methods and these assessments can then be shared to avoid duplication of effort. It translates* advances in scientific knowledge into new harmonized methods, promotes transparency in risk assessment, and reduces unnecessary testing of chemicals. The project benefits all those involved in chemical hazard/risk assessment (chemical assessment authorities and other risk assessment bodies, professionals, and researchers).

Although these publications are of keen interest to those who practice chemical risk assessments, they do not contain EHS information on specific chemicals and therefore are not directly relevant for purposes of the current project on knowledge management and information sharing for sound management of chemicals.

B.2.6.4. Health and Safety Guides (HSGs)

HSGs provide concise information in non-technical language, for decision-makers on risks from exposure to chemicals, with practical advice on medical and administrative issues. They are available for approximately 110 chemicals and physical agents. Note, nearly all of these documents were authored from the mid-1980's to the mid-1990's and thus caution should be exercised since it is unlikely that they contain the most up to date scientific information available. They are published by WHO and hard copies can be obtained from the Office of Distribution and Sales, World Health Organization, 1211 Geneva 27, Switzerland.

B.2.6.5. International Agency for Research on Cancer (IARC) - Summaries and Evaluations

The IARC Monographs identify environmental factors that can increase the risk of human cancer. These include chemicals, complex mixtures, occupational exposures, physical agents, biological agents, and lifestyle factors. National health agencies can use this information as scientific support for their actions to prevent exposure to potential carcinogens.

Interdisciplinary working groups of expert scientists review the published studies and evaluate the weight of the evidence that an agent can increase the risk of cancer. The principles, procedures, and scientific criteria that guide the evaluations are described in the Preamble to the IARC Monographs.

Since 1971, more than 1000 agents have been evaluated, of which more than 400 have been identified as carcinogenic, probably carcinogenic, or possibly carcinogenic to humans.

For answers to commonly asked questions on the evaluation process, read [the IARC Monographs Q&A](#).

Funding for IARC Monographs has been received from:

- United States National Cancer Institute
- United States National Institute of Environmental Health Sciences
- European Commission Directorate-General for Social Affairs, and Inclusion (initially from the Unit of Health, Safety and Hygiene at Work, and since 2014, from the European Union programme for Employment and Social innovation)

B.2.6.6. International Chemical Safety Cards (ICSC)

ICSC are developed cooperatively by the IPCS, the Commission of the European Union (EC), WHO and ILO. They summarize essential health and safety information on chemical substances in a clear way, and are not only intended to be used at the "shop floor" level by workers, but also by other interested parties in factories, agriculture, construction and other places of work. They are available for approximately 1800 chemicals.

Draft versions of the card containing a summary of health and safety information are prepared by cooperating scientific institutions. These institutions have the task of collecting and validating the relevant information. The cards are then peer-reviewed by a committee consisting of internationally-recognized experts who consider advice given by manufacturers, workers' representatives and poisons centers.

ICPS are published by the Commission of the European Union, and hard copies can be obtained from the Office for Official Publications of the European Union, 2 rue Mercier, L-2985 Luxembourg.

B.2.6.7. IPCS/EC Evaluation of Antidotes Series

This series provides definitive and authoritative guidance on the use of antidotes to treat poisoning. IPCS and EC are jointly undertaking a major project to evaluate antidotes used clinically in the treatment of poisoning. The aim of this project is to identify and evaluate for the first time in a scientific and rigorous way the efficacy and use of a wide range of antidotes. This series summarizes and assesses, on an antidote-by-antidote basis, their clinical use, mode of action and efficacy. The aim is to provide an authoritative consensus statement which will greatly assist in the selection and administration of an appropriate antidote. This scientific assessment is complemented by detailed clinical information on routes of administration, contra-indications and precautions. The series collates a wealth of useful information which will be of immense practical use to clinical toxicologists and all those involved in the treatment and management of poisoning. As of this writing, evaluations of fewer than 10 antidotes are available.

The IPCS/EC Antidotes Series are published by Cambridge University Press and hard copies can be obtained from Cambridge University Press, Cambridge CB2 2RU, England.

B.2.6.8. JECFA (Joint Expert Committee on Food Additives) - Monographs and Evaluations

Toxicological evaluations of food additives and contaminants and of residues of veterinary drugs in food, produced by the Joint WHO/FAO Expert Committee on Food Additives JECFA, are used by the Codex Alimentarius Commission and national governments to set international food standards and safe levels for protection of the consumer.

The monographs provide the toxicological information upon which the JECFA makes its evaluations. These monographs are prepared by scientific experts and peer reviewed at the JECFA meetings.

As of this writing, nearly 1200 JECFA Monographs are available and JECFA Summary Evaluations are available for approximately 2300 chemical substances.

B.2.6.9. JMPR (Joint Meeting on Pesticide Residues) - Monographs and Evaluations

Toxicological evaluations of pesticides, produced by the WHO/FAO Joint Meeting on Pesticide Residues JMPR, are used by the Codex Alimentarius Commission and national governments to set international food standards and safe levels for protection of the consumer.

The monographs provide the toxicological information upon which the JMPR makes its evaluations. These monographs are prepared by scientific experts and peer reviewed at the JMPR meetings.

As of this writing, monographs are available for more than 1000 pesticides. Although pesticides are explicitly excluded from the scope of the current project, they remain an interest of many SAICM stakeholders and thus these monographs and evaluations will have utility for some readers of this report.

B.2.6.10. KemI-Riskline

The Swedish Criteria Group for Occupational Standards – consensus reports and criteria documents. These documents are produced by the Swedish Criteria Group (SCG) and the Nordic Expert Group (NEG).

The SCG consists of about 15 scientific experts representing different fields of science, such as toxicology, occupational hygiene and occupational medicine. Their main task is to produce consensus reports and criteria documents to be used by the Swedish Work Environment Authority (SWEA) as the scientific basis for setting occupational exposure limits (OELs) for chemical substances in Sweden. The secretariat of the group is run by the SWEA and is located at Karolinska Institute in Stockholm, Sweden.

In most cases, a document is produced on request to the group from the SWEA. Evaluations are made of all relevant published original papers for a substance found in searches in relevant databases. Consensus reports are concise documents that summarize and evaluate scientific data relevant for setting an occupational exposure limit. They do not give a summary of all available data on a particular chemical,

but the particular studies that are important for establishing dose-effect/dose-response relationships and critical effect(s), are described in detail.

A draft consensus report (or sometimes a more comprehensive criteria document) is written by the secretariat or by a scientist appointed by the secretariat. A qualified evaluation is made of the information in the references. After discussions in the SCG, the draft is approved and accepted as a consensus report from the group. The SCG does not propose a numerical occupational exposure limit value for a substance, but, as far as possible, provides a dose-response/dose-effect relationship and the critical effect of occupational exposure. The documents are published in English, as well as in Swedish, by the University of Gothenburg in the scientific serial *Arbete och Hälsa*.

The main task of the NEG for Criteria Documentation of Health Risks from Chemicals is to produce criteria documents to be used by the regulatory authorities of the Nordic countries as the scientific basis for setting occupational exposure limits (OELs) for chemical substances. NEG consists of scientific experts from the Nordic countries (Denmark, Finland, Norway and Sweden) representing different fields of science, such as toxicology, epidemiology and occupational medicine.

The documents are risk evaluation reports, and constitute comprehensive reviews based on a thorough search of the scientific literature. The documents comprise data on physical and chemical properties, occurrence and use, analytical methods, occupational exposure, toxicokinetics, biological monitoring, and effects in animals and man. Finally, an evaluation of human health risks based on dose-effect/dose-response relationships and the identification of the critical effect(s) is made. No numerical values on OELs are given, as this is done at the national level, according to country-specific procedures. No information on environmental fate and effects is included.

The documents are published by the University of Gothenburg in the scientific serial *Arbete och Hälsa*.

The scientific serial *Arbete och Hälsa* is also available in the Kemi-Riskline database.

There are approximately 55 documents available; however, most provide evaluations of several chemicals each, so the total number of chemicals covered exceeds 150. Note, these documents were authored at various points in time during the past 30 years and thus caution should be exercised since it is unlikely that they all contain the most up to date scientific information available. Moreover, this database is no longer being updated.

B.2.6.11. Poisons Information Monographs (PIMs)

This is a global database with evaluated information on substances (chemicals, pharmaceuticals, poisonous plants, and poisonous and venomous animals) commonly involved in cases of poisoning. A PIM is a concise, practical document designed to facilitate the work of poisons information specialists, clinicians, and analysts.

The PIM is more than a simple monograph and part of a database. It is a dynamic document which represents an international consensus on the diagnosis, management and prevention of poisonings. It also constitutes the basis for training, a source of scientific reference and a stimulus for international cooperation amongst poisons centers and clinical toxicology units around the world.

The PIMs are prepared by collaborating poisons information centers and other experts throughout the world and are subjected to individual and peer review. PIMs summarize the physico-chemical and toxicological properties of the substance, the medical features of the effects produced by various routes of exposure to the substance, the patient management and the supporting laboratory investigations.

PIMs are available for approximately 80 chemicals, 100 pharmaceutical agents, 6 poisonous animals and more than 30 poisonous plants.

B.2.6.12. OECD Screening Information Data Sets (SIDS)

Note: for a fuller description of the SIDS program please reference the chapter on OECD Existing Chemicals (SIDS) below.

These documents summarize the literature on high production chemicals and provide an initial assessment for decision-makers. Only a small part of the SIDS is available from this source for approximately 400 chemicals. Note, since these documents were authored between 10 and 20 years ago and have not been updated, caution should be exercised in using them since it is unlikely that they contain the most up to date scientific information available. All the SIDS published until 2014 are available in the OECD Existing Chemicals database, searchable also through the OECD's eChemPortal.

B.2.6.13. UK Poison Information Documents (UKPID)

UKPID are detailed chemical and pharmaceutical monographs produced for poison centers by the UK National Poisons Information Service Centers. They are available for approximately 85 chemicals. No information could be found on how the UKPID are produced or updated.

B3 OECD Existing Chemicals Screening Information Dataset (SIDS) Database

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the Organization for Economic Cooperation and Development's (OECD) Existing Chemicals Database.

B.3.1. Overview/Description

From 1988 to 1998, the program focused primarily on the investigation of high production volume (HPV) chemicals, based on the assumption that production volume is a surrogate for data on occupational, consumer and environmental exposure.

For a few years prior to 2010, regulatory-binding comprehensive chemical assessment programmes (e.g., EU REACH, Canada's efforts to screen all chemicals on its market, etc.) started to be implemented at the national or regional levels, making the voluntary OECD HPV Chemicals Programme less attractive for sponsors to participate in the way it was initially designed.

This evolution forced led the OECD to invent ways to adapt the programme to maximize the usefulness of national or regional products for synergy between national or regional chemicals assessment programs and the OECD HPV Chemicals Programme. In 2010, the Cooperative Chemicals Assessment Programme was established, based on the previous High Production Volume (HPV) Chemicals Programme to better respond to the changing needs of member countries; it addresses a number of member country challenges, such as: assessing more chemicals in a shorter period of time; addressing all chemicals on the market; and avoiding duplication of on-going work in other countries. This evolution also promoted integrated approaches to testing and assessment. These approaches encourage the regulatory acceptance of non-test data, allow reduction of animal testing, and enable the assessment of larger numbers of chemicals based on e.g. similarity in structure, mode of action, metabolic pathways, etc.

Since From 2010 - 2014, the Programme continued to examine full SIDS assessments, and also encompasses assessments covering a sub-set of SIDS endpoints or non SIDS endpoints (targeted assessment) for chemicals of sufficient global interest, be they HPV or non HPV chemicals. Another new feature was the assessment of groups of chemicals for a sub-set of SIDS or non SIDS endpoints (e.g. bioaccumulation or carcinogenicity).

At the end of 2014, the Programme was again updated. A focus of the Working Party on Hazard Assessment includes to facilitate and support the work of the OECD on the hazard assessment of chemicals including:

- harmonization of hazard assessment methodologies and integrated approaches to testing and assessment
- elaboration of OECD-wide agreed hazard assessments
- improving sharing of and access to information on chemicals

This includes the development of harmonized novel methodologies for assessing the hazards of chemicals to:

- ensure consistency
- generate confidence and support for integrating novel tools and approaches into regulatory decision-making
- increase the mutual acceptance of hazard assessments in order to avoid duplication of efforts

Types of Output:

- Case studies on using novel methods for regulatory decision-making
- Application of Adverse Outcome Pathways
- Integrated approaches to testing and assessment
- QSAR Toolbox

The focus of the current COCAP programme is the development of case studies on Integrated Approaches to Testing and Assessment ([see OECD Website](#)) and assessment of combined exposures to multiple chemicals. A strong focus of the new OECD Programme is also the use of in silico methods such as the (Q)SAR Application Toolbox for predicting or estimating (eco-)toxic or fate properties, or simply to support weak experimental results.

Going forward there are four main program areas:

I. Elaboration and dissemination of OECD-wide agreed conclusions on hazards of chemicals;

- II. Development and application of integrated approaches to testing and assessment;
- III. Avoiding duplication; and
- IV. Providing a forum to exchange experience in member countries

V. Elaboration and dissemination of OECD-wide agreed conclusions on hazards of chemicals:

Until 2014, the focus of the Programme is to derive OECD-wide agreed hazard assessments of chemicals; its scope includes HPV chemicals as well as non-HPV, new and existing industrial chemicals. There continues to remain a possibility for countries to elaborate agreed hazard assessments.

The Screening Information Data Set (SIDS) is the reference data set to perform an initial assessment. Full SIDS initial assessments, which address all SIDS endpoints for chemicals and chemical categories, are sponsored and prepared by member countries and the chemical industry. Hazard assessments prepared by the chemical industry and authorities (in the context of national/regional and industry programmes) were submitted to the programme with minimal rewriting and reformatting. However, the general objectives of the SIDS Initial Assessment Report and SIDS Dossier had to be met when submitting full SIDS assessments.

The Programme generated targeted assessments, i.e. hazard assessments that address a limited number of hazard endpoints short of the full SIDS assessment, or for other non-SIDS hazard endpoints. The purpose of elaborating targeted assessments is to increase the availability of internationally agreed hazard assessments (even if it is on a limited number of endpoints) and improve efficiency. Specific types of chemicals, such as metals/inorganics, petroleum substances or polymers are also addressed in addition to developing the necessary guidance to assess the hazards of these substances.

Member countries and industry shared the task of elaborating and reviewing hazard assessments for chemicals, while maintaining the current OECD high quality of assessments. Industry could submit draft assessments either via a sponsor country, which performed a first review of the assessment, or directly through the Business and Industry Advisory Committee to OECD (BIAC).

The status of all chemicals being assessed in the Programme as well as access to final agreed assessments is available in the [OECD Existing Chemical Database](#). OECD-wide agreed hazard assessments are also disseminated via the OECD eChemPortal.

Agreed conclusions were regularly published in a collection of cooperative chemicals assessments in the OECD Series on Testing and Assessment.

I. Development and application of Integrated Approaches to Testing and Assessment:

The Programme develops integrated approaches to testing and assessment and improves their regulatory acceptance by applying them to actual hazard assessments elaborated within the Programme.

Efforts continue to focus on expanding the chemical category concept, which has proven so successful over the last 10 years. New ways of grouping chemicals into toxicologically appropriate categories, e.g. according to mechanisms or modes of action, are also being investigated.

The Programme continues to improve the expertise in and regulatory acceptance of (Q)SAR methodologies in general, via an improved collaboration between (Q)SAR experts and hazard assessors and trainings.

As new types of data such as genomics or high-throughput in vitro test results become available, the Programme investigates how such data sets can be used to characterize the hazards of chemicals.

II. Avoiding Duplication

As member countries implement their national/regional programmes to assess more chemicals in a shorter timeframe, the potential for duplication of work increases, the eChemPortal continues to improve access to existing hazard information and assessments, including GHS classifications and underlying datasets. The Programme is also a forum to share future plans for chemical assessment within countries and regions and to discuss possible partnerships, so contributing to the goal of avoiding duplication.

III. Providing a Forum to exchange experience in Member countries

The Programme is a forum to exchange experience among member countries to avoid duplication of effort and identify issues for collaborative work. Examples of topics for exchange of information and experience are:

- National/regional and industry-developed methodologies for hazard assessment
- Priority setting
- Categorization of inventories
- GHS classifications
- Effects from exposure to multiple chemicals
- Assessment of endocrine disruptors
- Case study assessments of nanomaterials

B3.2. Scope of Chemicals Addressed

The scope included HPV chemicals as well as non-HPV, new and existing industrial chemicals. HPV chemicals are defined as all chemicals reported to be produced or imported at levels greater than 1,000 tonnes per year in at least one OECD member country or in the EU region. The decision means that member countries cooperatively:

- selected the chemicals to be investigated;
- collected characterization, effects and exposure information from government and public sources and encouraged industry to provide information from their files;
- completed the agreed dossier for the Screening Information Data Set (SIDS) by testing; and
- made an initial assessment of the potential hazard of each chemical investigated.

Targeted assessments for other specific types of chemicals, such as metals/inorganics, petroleum substances or polymers may also be addressed in addition to developing the necessary guidance to assess the hazards of these substances. As of this writing, conclusions and assessment reports have been published for nearly 1500 chemicals.

B3.3. Ease of Access and Use of Chemical Information

The database has a comprehensive search facility allowing searches for chemical information based on selected criteria. For example, data on individual chemicals can be searched, or the chemical information can be searched according to whether it has been sponsored (e.g. in the case of HPV chemical), who sponsored it, its SIDS process status, ICCA status, or type of assessment (targeted/non-targeted). Further information on search criteria is included in the “Help” section.

In addition to searching for specific user-defined information, the database also contains several useful lists and reports, for example, users can view a list of all sponsored chemicals by country or an alphabetical list of all chemical categories. Under “Reports”, for example, the “Overall Status” report allows users to view the statistics on the status of all chemicals that have been assessed in the programme.

B3.4. Breadth and Depth of EHS Information Available

The content of the Screening Information Data Set (SIDS) was adopted in November 1989 and revised in February 2000. The SIDS content is organized under five headings:

- Substance Information (identity, quantity, and exposure through use patterns),
- Physical Chemical Properties (melting point, boiling point, vapor pressure, partition coefficient, water solubility, dissociation constant, and Redox potential),
- Environmental Fate (photo-degradation, stability in water, transport and distribution between environmental compartments, including distribution pathways and aerobic biodegradation),
- Environmental Toxicology (acute toxicity to fish and aquatic invertebrates (e.g. Daphnia), toxicity to aquatic plants (e.g., Algae), and conditionally chronic toxicity to terrestrial species, fish and invertebrates) and
- Mammalian Toxicology (acute and repeated dose toxicity, in vitro genetic toxicity, conditionally in vivo genetic toxicity, and reproductive/developmental toxicity and any available human epidemiology evidence).

Detailed information on SIDS required content is available online.

For physical-chemical properties, environmental fate and environmental toxicity, a cautionary statement is added whenever modeled data on inorganic substances are provided, as the model used may have limitations (e.g. outside the applicability domain) for inorganic chemicals.

For the purpose of gathering data for compiling a SIDS Dossier for either a full SIDS assessment or a targeted assessment, robust study summaries for each entry of the Dossier were prepared. OECD Templates exist for this purpose. These templates exist for all hazard endpoints, SIDS and non SIDS.

A chemical assessment contains: i) an assessment report discussing the key findings for each hazard endpoint covered in the assessment, ii) a profile summarizing the conclusions for each hazard endpoint,

and iii) study summaries or robust study summaries for data gathered on each hazard endpoint covered in the assessment (either separately or as part of the assessment report).

When a draft chemical hazard assessment was available from a sponsor, an initial assessment of the information was undertaken, and conclusions are drawn on the potential hazard(s) posed by the chemical. The chemical assessment can cover all SIDS endpoints or a subset of SIDS endpoints (i.e. targeted assessment), with the addition of non-SIDS endpoints occasionally. Until 2014, a Cooperative Chemicals Assessment Meeting (CoCAM) was organized twice a year to discuss draft chemical assessments submitted by sponsors and to agree on hazard conclusions. The conclusions present a summary of the hazard(s) of the chemical, written with sufficient detail and clarity as to be informative and to assist countries with classification work and other hazard- based national decision making; and succinct exposure information to put the hazard information into context (e.g. on use of the chemical(s) in the sponsor country).

B3.5. Quality of Underlying EHS Information

The hazard conclusions agreed at a CoCAM were endorsed by both the Working Party on Hazard Assessment (formerly the Task Force on Hazard Assessment) and the Joint Meeting of the Chemicals Committee and Working Party on Chemicals, Pesticides and Biotechnology consecutively. Summary conclusions were published in the OECD Existing Chemicals Database. When the hazard assessment (including the assessment report and study summaries) was finalized, it was made available to the public via the Existing Chemicals database. The hazard assessment itself can be lodged on a government website, in the Existing Chemicals database itself or on the UNEP Chemicals website. Once agreed and finalized in the OECD, the database contains all documents associated with the final published assessment (profiles, assessment reports and dossiers).

This database tracks all chemicals in the OECD cooperative Chemicals Assessment Programme. High production volume (HPV) chemicals are tracked from the time that they are identified as an HPV to OECD until a full SIDS assessment has been completed. Other chemicals (such as targeted assessments) are tracked from either the time they are identified to OECD or when they are submitted for discussion at a CoCAM through completion. The database contains any annotations on each chemical provided to the Secretariat by member countries.

The summaries and evaluations contained in this assessment report may be based on unpublished proprietary data submitted for the purpose of the OECD assessment.

In many cases, national/regional regulatory authorities will not accept a regulatory submission based on the summaries and evaluation of unpublished proprietary data contained in this [these] assessment report[s] unless they have received the data on which the summaries and evaluation are based, either from:

- the owner of the data; or
- a second party that has obtained permission from the owner of the data for this purpose; or
- alternatively, the applicant has received permission from the data owner that the summary and evaluation contained in this [these] assessment report[s] may be used in lieu of the data; or
- following expiry of any period of exclusive use, mandatory compensation, where required, has been offered unless the period of protection for the proprietary data concerned has expired.

B3.6. Procedures for Updating the Database with New Information

New information is included in the database only when it has been notified to OECD by Member Countries. A search of the database finds that many of the published assessments are 15-20 years old, and thus some caution should be exercised since it is unlikely that they all contain the most up to date scientific information available.

B4 European Chemicals Agency (ECHA) EHS Databases

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from ECHA.

ECHA is an agency of the European Union which manages the technical, scientific and administrative aspects of the implementation of the European Union regulation called Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). ECHA is the driving force among regulatory authorities in implementing the EU's chemicals legislation. ECHA helps companies to comply with the legislation, advances the safe use of chemicals, provides information on chemicals and addresses chemicals of concern. It is located in Helsinki, Finland. The Agency started working on 1 June 2007.

For a fuller discussion of ECHA and REACH, please consult directly with the [ECHA website](#).

B4.1. Overview/ Description

The main piece of legislation in the European Union (EU) for regulating chemicals is known as REACH, which stands for Registration, Evaluation, Authorization and Restriction of Chemicals. REACH was formally adopted and came into force on 1 June 2007.

Companies are responsible for collecting information on the properties and uses of the substances they manufacture, import or use above one tonne a year. They also have to assess the hazards and potential risks presented by the substance. This information is communicated to ECHA through a registration dossier containing the hazard information and, where relevant, an assessment of the risks that the uses of the substance may pose and how these risks should be controlled.

There is a special transitional regime for substances which were already manufactured or placed on the market before 1 June 2007 when REACH entered into force. Such substances are called “phase-in” substances. For these “phase-in” substances, the REACH Regulation established the following registration deadlines:

30 November 2010

Deadline for registering substances manufactured or imported at 1,000 tonnes or more a year; substances that are carcinogenic, mutagenic or toxic to reproduction above 1 tonne a year; and substances dangerous to aquatic organisms or the environment above 100 tonnes a year.

31 May 2013

Deadline for registering substances manufactured or imported at 100-1,000 tonnes a year.

31 May 2018

Deadline for registering substances manufactured or imported at 1-100 tonnes a year.

If a manufacturer or importer does not register by the deadlines, the substance may not be manufactured in the EU or placed on the EU market until after it has been registered.

All substances that did not meet the criteria for “phase-in” substances were considered as “non-phase-in” substances. Normally, “non-phase-in” substances were not manufactured, placed on the market or used in the EU before 1 June 2008, (unless they were notified under the Dangerous Substances Directive). Potential manufacturers and importers of “non-phase-in” substances must submit an inquiry to ECHA and subsequently register the substance before they can manufacture or import the substance. All substances notified under the Dangerous Substances Directive (also called NONS) are considered to be registered under REACH and ECHA assigned registration numbers to all the notifications.

ECHA receives and evaluates individual registration dossiers from companies or, if the company is not based in the EU, from only-representatives (OR), to ensure compliance, and the EU Member States evaluate selected “prioritized” substances to clarify initial concerns for human health or for the environment. Authorities and ECHA's scientific committees assess whether the risks of substances can be managed. Authorities can ban hazardous substances if their risks are unmanageable. They can also decide to restrict a use or make it subject to a prior authorization.

B4.2. Scope of Chemicals Addressed

The scope of chemicals addressed by REACH is very clearly described and is quite comprehensive. Registration is required for all substances manufactured or imported in quantities of one tonne or more per year per manufacturer or importer unless they are exempted from the scope of registration (see below for a list of exemptions). The registration requirement applies to all substances irrespective of whether they are hazardous or not. This includes substances on their own, in mixtures or substances in articles when they are intended to be released under normal or reasonably foreseeable conditions of use.

For all registrations, a registration dossier has to be prepared and submitted electronically to ECHA. The information that the registrant has to provide in the registration dossier will depend on the volume (tonnes manufactured or imported per year) of the substance to be registered.

The definition of a substance under REACH is very broad and includes not only chemicals whether hazardous or not, but every type of substance manufactured in or imported into the EU.

It includes substances which are already closely regulated by other legislation such as radioactive substances, medicines, food or foodstuffs, biocides or pesticides. These substances are completely or partially exempted from REACH registration requirements, because they were already heavily regulated by other pieces of EU regulation. Other substances within the scope of specific pieces of legislation, e.g. food-packaging and cosmetics, although subject to registration, have reduced risk assessment requirements under REACH.

Registration is based on the "one substance, one registration" principle. This means that manufacturers and importers of the same substance have to submit their registration jointly. The analytical and spectral information provided must be consistent and sufficient to confirm the identity of the substance.

Accurate identification of a substance is a pre-requisite for REACH registration. In particular, it enables joint registrations to be prepared efficiently and correctly and ensures that test data is appropriate for the substance registered under REACH. This leads to a robust hazard and risk assessment of the registered substance.

Typically, the identity of a substance can be described by:

- chemical name, for example, benzene;
- number, for example, European Community (EC) number 200-753-7, and
- chemical composition, for example, >99 % benzene and <1% toluene. The composition is determined by chemical analysis.

A fee is usually charged for substance registration

The registration obligations apply to the individual substances themselves, independent of whether they are on their own, in a mixture or in an article. In other words, only substances have to be registered under REACH, mixtures or articles do not.

Substance means a chemical element and its compounds. The term substance includes both substances obtained by a manufacturing process (for example formaldehyde or methanol) and substances in their natural state. The term substance also includes its additives and impurities where these are part of its manufacturing process, but excludes any solvent which can be separated without affecting the stability of the substance or changing its composition. Detailed guidance on substances and substance identity can be found in the Guidance on identification and naming of substances under REACH and Classification, Labelling and Packaging (CLP).

Mixture means a mixture or solution composed of two or more substances. Typical examples of mixtures under REACH include paints, varnishes and inks. REACH obligations apply individually to each of the substances contained in the mixture depending on whether the individual substances are within the scope of REACH.

When contained in a mixture, each individual substance needs to be registered if the threshold of one tonne per year is reached. The registration obligation applies to the manufacturer or importer of each individual substance, or in case that the mixture is imported as such, to the importer of the mixture.

An article is an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition (e.g. manufactured goods such as textiles, electronic chips, furniture, books, toys, kitchen equipment). An individual substance in an article is subject to the registration obligations in case it is present in the article in quantities over one tonne per year and the substance is intended to be released under normal or reasonably foreseeable conditions of use. The registration obligation applies to the producer of the article or, in case the article is imported, to the importer, insofar as the substance has not been registered for that use.

The following substances are exempt from REACH:

- Radioactive substances
- Substances under customs supervision (e.g., in temporary storage, in a free zone or a free warehouse with a view to re-exportation, etc.)
- substances used in the interest of defense and covered by national exemptions
- waste (any substance or object which the holder discards or intends or is required to discard)
- non-isolated intermediates (an intermediate that during synthesis is not intentionally removed (except for sampling) from the equipment in which the synthesis takes place)
- transported substances (unless they are manufactured, imported or used within the EU).
- substances that present minimum risk because of their intrinsic properties (like water, nitrogen, etc.).
- substances for which registration is deemed inappropriate or unnecessary (such as substances occurring in nature like minerals, ores and ores concentrates if they are not chemically modified).
- polymers (however, monomer substances or any other substances they consist of must be registered under certain conditions).
- certain substances that are adequately regulated under other pieces of legislation, like substances used in food or foodstuffs or in medicinal products.
- Additional exemptions from registration apply to substances that are already registered and are either exported and re-imported into the EU or recovered through a recovery process in the EU.
- substances used for the purpose of research and development
- substances which are considered the active ingredients in biocides and plant protection products (these substances are already considered to be registered because they have undergone extensive evaluation and risk assessment under the auspices of other pieces of EU legislation)
- substances which were notified according to Directive 67/548/EEC which introduced a notification requirement for so-called new substances, which were substances not appearing on the European Inventory of Existing Commercial Chemical Substances (EINECS). (The EINECS list contains, in principle, all substances on the Community market on 18 September 1981. Notifications made in accordance with Directive 67/548/EEC contain much of the technical dossier information which the REACH Regulation aims to have assembled by registrants through the registration requirement.)

B4.3. Ease of Access and Use of Chemical Information

ECHA maintains a database of pertinent information on substances registered under REACH that is easily accessible and searchable.

Navigating the database is straightforward, easy and self-explanatory. Scrolling over selected data fields often produces pop-up text boxes which provide fuller explanations and definitions of those fields and possible limitations of the data that may exist. It is difficult to envision how it could be made simpler for users.

The data comes from registration dossiers submitted to ECHA by companies who registered their substances. ECHA publishes information included in the registrations dossiers on its website to make it freely available for the public so they can have access to information on any potential risks of the chemicals that they are using. The information ECHA has published covers the identity of the substance, the results of studies on its intrinsic properties and hazard profiles, the levels where no adverse effects are expected for human health or the environment, its classification and labelling, as well as guidance on

its safe use. If not claimed confidential, ECHA will also publish on the substance its degree of purity essential for classification and labelling, total tonnage band, (robust) study summaries, information in the safety data sheet and the trade name.

Before submitting their dossiers, registrants have the opportunity to request that certain data be kept confidential and to check what information will be publicly available. Requesting confidentiality applies only to a limited set of data and requires a justification, which will be evaluated by ECHA. In case the confidentiality request(s) is rejected by ECHA, the registrant can ask the Agency to review the rejection decision.

ECHA warns visitors to its website “Please note that some of the information on registered substances may belong to third parties. The use of such information may therefore require the prior permission of the third-party owners. Please consult the Legal Notice for further information.”

As of 20 August 2018, ECHA’s database of registered substances contained 21,248 unique substances and information from 88,851 dossiers. The difference between the number of unique substances registered and the number of dossiers is easily explained and is due to the fact that, while REACH requires multiple producers or importers of the same substance to work together to submit a common registration, individual companies must still file their own dossiers.

ECHA’s database is searchable by any of the following (see Figure B1):

- **Substance Identity**
 - substance name (EC Name, regulatory process names, non-confidential IUPAC names and all public names provided by registrants). Full or partial names can be used to search the data base.
 - Chemical Abstract Service (CAS) registry number (format nnnnnxx-xx-x).
 - European Community (EC) number or list number (format xxx-xxx-x). EC assigned numbers start with 2, 3, 4 or 5. Those starting with 6, 7, 8 or 9 have been assigned by ECHA.
 - other numerical identifiers such as Classification, Labelling and Packaging (CLP) Annex VI Index number. If more than one type of identifier is selected, the results will include substances where at least one match is found for one of the selected types.
- **Administrative Data**
 - registration type (REACH Full registration, REACH Intermediate registration, NONS notification).
 - submission type (individual or joint)
 - country in which the registrant is registered.
 - First published date
 - Last update date
 - Name of registrant(s) (name of those companies which have registered the substance or which are suppliers of the substance. Full or partial company names can be used.)
 - Registration number (REACH registration number. Full or partial registration numbers can be used.)
- **Substance Data**
 - Tonnage band (tonnage band manufactured and / or imported per year to the European Economic Area (EEA) (EU 27 + Iceland, Liechtenstein and Norway).)

- Tonnage band range (extracted for the last year reported on the tonnage manufactured or imported, unless the tonnage band has been claimed confidential. The Total Tonnage band published does not necessarily reflect the registered tonnage band(s).)
- Substance has nanoform (yes or no; reported as Nanomaterial in a composition or physical state, or there is a Nanomaterial Endpoint Study reported on a registered substance.)
- PBT (Persistent Bioaccumulative Toxic) assessment outcome (Note that data on PBT assessment outcome may be claimed confidential and is not yet available for all disseminated substances since the relevant field was only made available from the IUCLID 5.4 release.)
- CAS (Chemical Safety Assessment) performed (yes, no or confidential).
- **Uses and Exposure**
 - Life-cycle (If a life cycle is selected, searches return substances with registered dossiers where there is at least one use within the selected life cycle category.)
 - Consumer Uses
 - Article service life
 - Widespread uses by professional workers
 - Formulation or re-packing
 - Uses at industrial sites
 - Manufacture
 - Search operator (And/Or; The search operator applies to both Lifecycle and Category. If the search operator is defined as AND, searches will return substances with at least one use for all selected life cycle categories AND containing uses with all selected use descriptors. If the search operator is defined as OR searches will return substances where there is at least one use reported in the registered dossier matching any of the selected search criteria.
 - Category (Search for registered substances with specific uses and exposure.)
 - Product category (42 separate product use categories)
 - Sector of use (24 separate sector of use categories)
 - Process category (28 separate process categories)
 - Environmental release category (26 separate environmental release categories)
 - Article category (81 separate article categories)

Figure B1

Screen Shot of Search Page

REGULATIONS

REACH

CLP

BPR

PIC

PUBLIC CONSULTATIONS

INFORMATION ON CHEMICALS

SUPPORT

ECHA > Information on Chemicals > Registered substances

Registered substances

The data comes from registration dossiers submitted to ECHA by the date indicated as last update. The Total Tonnage Band is compiled from all the dossiers with two exceptions; any tonnages claimed confidential and any quantity used as an intermediate to produce a different chemical. The Total Tonnage band published does not necessarily reflect the registered tonnage band(s).

Please note that some of the information on registered substances may belong to third parties. The use of such information may therefore require the prior permission of the third party owners. Please consult the *Legal Notice* for further information.

Please note that information on chemical properties of registered substances is directly accessible via *eChemPortal*.

Chemical Property Data Search

FURTHER INFORMATION

- Registered substances information
- How to determine what will be published (Data Submission Manual 15)
- Understanding REACH Regulation
- Q&A on registered substances
- Give us your feedback
- eChemPortal
- REACH study results download

Last updated 01 February 2018. Database contains 17535 unique substances and contains information from 67053 dossiers.

Substance Identity

Substance name:

CAS number:

EC / List number:

Other Numerical Identifiers:

Type

Administrative data

Registration type:

First published date:

Submission type:

Last update date:

Country in which registered:

Registrant name:

Registration number:

Substance data

Tonnage band:

PBT assessment outcome:

Select total tonnage band range:

CSA performed:

Substance has nanoform:

Uses and exposure

Life cycle:

Category:

Search operator:

View all Registered Substances

Search

Clear all

Although one could forgo the use of the search tools and simply scroll through the list of registered substances to find a substance of interest, the enormous size of the database would make this a rather daunting task.

Once one is able to locate the substance(s) of interest, a simple click of the mouse on the name of the substance opens additional tabs which contain substance-specific information as described below.

B4.4. Breadth and Depth of EHS Information Available

The breadth and depth of environmental, health and safety information available on each registered substance will vary depending on REACH requirements which are largely dictated by its volume, somewhat modified by uses and exposures. The potential data available can be vast and deep or rather superficial if exposures and risks are likely to be minimal. For instance, substances manufactured/imported/used at quantities less than 10 tonnes per year have reduced information requirements. Table B1 below [summarizes the information](#) required for substances produced and/or imported within specified tonnage bands. Note that since this table was published, ECHA now accepts an extended one-generation reproductive toxicity test in lieu of the two-generation test.

Table B1
REACH standard information requirements

REACH standard information requirements				
The requirements below have to be adapted, waived or increased, according to the rules given in columns 1 and 2 of annexes VII to X and according to annex XI.				
≥ 1000 t/year (annexes VII + VIII + IX + X)				
100-1000 t/year (annexes VII + VIII + IX)				
10-100 t/year (annexes VII + VIII)				
1-10 t/year (annex VII)				
Information category	Toxicological information	- Skin irritation or skin corrosion (in vitro) - Eye irritation (in vitro) - Skin sensitisation - Mutagenicity (in vitro, gene mutation bacteria) - Acute toxicity (oral route)	- Skin irritation (in vivo) - Eye irritation (in vivo) - Mutagenicity (in vitro, cytogenicity mammalian cells or micronucleus) - Mutagenicity (in vitro, gene mutation mammalian cells) - Acute toxicity (inhalation) - Acute toxicity (dermal route) - Repeated dose toxicity (28 days, one species) - Reproductive toxicity (screening, one species) - Toxicokinetics (assessment from available information)	- Repeated dose toxicity (28 days, one species)* - Repeated dose toxicity (90 days, one species, rodent) - Reproductive toxicity (pre-natal development, one species) - Reproductive toxicity (two generations, one species)
		- Aquatic toxicity (short term, invertebrates) - Aquatic toxicity (short term, aquatic plants) - Degradation (biotic, readily biodegradability)	- Aquatic toxicity (short term, fish) - Aquatic toxicity (activated sludge respiration, inhibition testing) - Degradation (abiotic, hydrolysis function of pH) - Fate and behaviour in the environment (adsorption/desorption screening)	- Degradation (biotic, further testing) - Fate and behaviour in the environment (further information) - Effects on terrestrial organisms (long term, invertebrates) - Effects on terrestrial organisms (long term, plants) - Effects on sediment organisms (long term) - Effects on birds (long term or reproductive)
		- State of the substance at 20°C and 101.3 kPa - Melting/freezing point - Boiling point - Relative density - Vapour pressure - Surface tension - Water solubility - Partition coefficient n-octanol/water - Flash-point - Flammability - Explosive properties - Self-ignition temperature - Oxidising properties - Granulometry		- Stability in organic solvents and identity of relevant degradation products (if substance stability is considered to be critical) - Dissociation constant - Viscosity

* These studies have to be carried out if they have not been completed for the lower tonnage band because of waiving

ECHA presents the information in a layered manner, with progressively more detailed information available to the user as they click their way through the links.

Once the user clicks on the name of the substance, they are taken to a summary page that lists the following information (note clicking on some of the information will take the user to additional information -- see Figure B2):

- Substance identity, including EC list number, CAS number and Molecular formula
- Hazard classification and labeling warnings, including iconographic symbols
- Properties of concern (e.g., carcinogenic, reproductive hazard, etc.)
- Important to know (e.g., use restrictions under REACH)
- Precautionary measures to be taken
- Guidance on safe use of the substance
- Tonnage data (unless declared confidential)
- Consumer uses
- Article service life
- Widespread uses by professional workers
- Formulation and re-packing
- Uses at industrial sites
- Manufacture
- Regulation and Regulatory Activities (i.e., CLP, REACH, Existing Substances Regulation (ESR))
- Other names for the substance (if they exist)

Figure B2
Screen Shot of Substance Information

An agency of the European Union
English (en) ▼

ECHA

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[ECHA](#) > [Substance Information](#)

Substance information

Infocards are automatically generated based on industry data. [What is an infocard?](#)

[RSS](#)

Chloroethylene

Vinyl Chloride

Other names: Regulatory process names [4] Trade names [24] Other names [2] IUPAC names [14]

Substance identity ? EC / List no.: 200-831-0 CAS no.: 75-01-4 Mol. formula: C₂H₃Cl <chem>H2C=CHCl</chem>	Hazard classification & labelling ? Danger! According to the harmonised classification and labelling (CLP00) approved by the European Union, this substance may cause cancer and is an extremely flammable gas.	Properties of concern ? C Important to know ? - Some uses of this substance are restricted under Annex XVII of REACH. How to use it safely ? Precautionary measures suggested by manufacturers and importers of this substance. Guidance on the safe use of the substance provided by manufacturers and importers of this substance.
--	---	--

About this substance ?

This substance is manufactured and/or imported in the European Economic Area in 1 000 000 - 10 000 000 tonnes per year.

This substance is used in articles, by professional workers (widespread uses), in formulation or re-packing, at industrial sites and in manufacturing.

Consumer Uses

ECHA has no public registered data indicating whether or in which chemical products the substance might be used. ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment.

Article service life

Release to the environment of this substance can occur from industrial use: manufacturing of the substance, for thermoplastic manufacture and in the production of articles. Other release to the environment of this substance is likely to occur from: indoor use in close systems with minimal release (e.g. cooling liquids in refrigerators, oil-based electric heaters), outdoor use in long-life materials with low release rate (e.g. metal, wooden and plastic construction and building materials) and ...

[about INFOCARD](#) - Last updated: 18/12/2017

Near the bottom of the page there is a link to the REACH registration dossier (alternatively the user can click on the symbol for an eye on the right-hand side of the line listing the name of the chemical). A click on the dossier opens an additional tab that contains the following information (see Figure B3):

Figure B3
Screen Shot of Available EHS Information

Use of this information is subject to copyright laws and may require the permission of the owner of the information, as described in the [ECHA Legal Notice](#).

Chloroethylene

EC number: 200-831-0 | CAS number: 75-01-4
Vinyl Chloride

General information

Classification & Labelling & PBT assessment

Manufacture, use & exposure

Physical & Chemical properties

Environmental fate & pathways

Ecotoxicological information

Toxicological information

Analytical methods

Guidance on safe use

Assessment reports

Reference substances

General information

Identification Compositions Registration data Administrative data Contact Persons responsible for the SDS

Identification



Display Name:	Chloroethylene
EC Number:	200-831-0
EC Name:	Chloroethylene
CAS Number:	75-01-4
Molecular formula:	C2H3Cl
IUPAC Name:	chloroethene

Type of substance

Composition:	mono-constituent substance
Origin:	organic

Other names

Trade names:	1-Chloroethene 1-Chloroethylene chlorek winylu Chlorethene Vinyl chloride
--------------	---

- General Information (substance identification, trade names, tonnage band, publication dates, type of REACH registration, chemical safety assessment completed, names of registrants, administrative data (see above for description), contact person for Safety Data Sheets)
- Classification and Labelling and PBT Assessment
- Manufacture, Use and Exposure information, including uses advised against
- Physical and Chemical Properties (an extensive list is available)
- Environmental Fate and Pathways
 - Endpoint summary
 - Stability
 - Biodegradation
 - Bioaccumulation
 - Transport and distribution
 - Environmental data
 - Additional information on environmental fate and behavior
- Ecotoxicological Information
 - Ecotoxicological Summary
 - Aquatic toxicity
 - Sediment toxicity
 - Terrestrial toxicity
 - Biological effects monitoring
 - Biotransformation and kinetics
 - Additional ecotoxicological information
- Toxicological Information (includes human epidemiology information, if available)
 - Toxicological Summary
 - Toxicokinetics, metabolism and distribution
 - Acute Toxicity
 - Irritation / corrosion
 - Sensitization
 - Repeated dose toxicity
 - Genetic toxicity
 - Carcinogenicity
 - Toxicity to reproduction
 - Specific investigations
 - Exposure related observations in humans
 - Toxic effects on livestock and pets
 - Additional toxicological data
- Analytical Methods
- Guidance on Safe Use
 - First-aid measures
 - Fire-fighting measures
 - Accidental release measures
 - Handling and storage
 - Transport information
 - Exposure controls / personal protection
 - Stability and reactivity
 - Disposal considerations

- Assessment Reports
- Reference Substances

A further click on each of the sections above expands the data available for viewing by the user. Often times, there will be an endpoint summary available that provides a high-level narrative overview of the environmental, health and safety evidence that exists which can be very useful for those users who need only a synopsis.

There are literally dozens of documents and thousands of pages available from the ECHA website that provide guidance for registrants on how to prepare their registration dossiers and chemical safety assessments (CSA). It is very complex. Separate documents describe strategies and methods for searching the literature to identify existing EHS evidence on substances, how to document such searches, evaluating and rating individual studies for quality and reliability, using Quantitative Structure Activity Relationship models and other read across techniques, identifying data gaps vs REACH information requirements, determining whether additional ecotoxicology or toxicology testing is required, developing testing strategies, specifying test methods that must be used and dictating Good Laboratory Practices are followed, testing waiving proposals, and how to conduct weight of the evidence evaluations. Registrants are strongly encouraged to provide information sources, reference to test methods and justifications as appropriate in the hazard assessment. If they deviate from the standard method, they are encouraged to provide information that can be understood by an independent reviewer.

At the heart of the registration dossier is the CSA. According to ECHA, “The chemical safety assessment (CSA) of a manufacturer shall address the manufacture of a substance and all the identified uses. The chemical safety assessment of an importer shall address all identified uses. The chemical safety assessment shall consider the use of the substance on its own (including any major impurities and additives) and in mixtures. The assessment shall consider all stages of the life cycle of the substance resulting from the manufacture and identified uses, including the service life of the substance in articles and the waste life stage. The chemical safety assessment shall be based on a comparison of the potential adverse effects of a substance with the known or reasonably foreseeable exposure of man and/or the environment to that substance considering implemented and recommended risk management measures and operational conditions.”

According to REACH guidance, for each environmental protection target (e.g., organisms ranging from microorganisms through aquatic and terrestrial predators), a conclusion on the substance hazard has to be reported and can be one of the following:

- A Predicted No-Effect Concentration (PNEC) can be derived (judged by ECHA to be the most common situation): quantitative risk characterization is carried out. This consists of comparing the actual predicted substance exposure concentration (PEC) in an environmental compartment (water, soil or air) with the related PNEC. This is done separately for each of eleven environmental protection targets or
- No PNEC can be derived and: No hazard is identified for that protection target; therefore, no exposure assessment is required; A hazard is identified or cannot be excluded and therefore a qualitative risk characterization has to be carried out.

A description of the derived PNECs and PECs and/or qualitative risk characterizations can be found under the ecotoxicological information section listed above.

In addition, for substances that are manufactured/imported/used in quantities of 10 tonnes per year or more a Derived Minimum Effect Level (DN(M)EL) must be calculated for the CSA for every relevant human population and every relevant route, duration and frequency of exposure, if feasible. REACH requires a risk characterization be completed for the leading health effect (i.e., the toxicological effect that results in the most critical DNEL) for a given exposure pattern (duration, frequency, route and exposed human population) associated with an exposure scenario (ES). It is to be noted that one exposure pattern can fit to more than one ES.

For workplace exposure, there may already exist occupational exposure limits (OELs). Under certain circumstances OELs and/or the underlying information used for setting the OELs can be used to derive the DNEL.

REACH requires differences between effect assessment data and the real human exposure situation to be addressed, considering variability and uncertainty within and between species.

In order to address these differences, assessment factors (AF) should be applied accounting for (1) inter-species differences; (2) intra-species differences; (3) differences in duration of exposure; (4) issues related to dose-response estimation; and (5) the quality of the entire database. The applied AFs only correct for uncertainties/variability in the effect data, not for exposure uncertainties.

In conclusion, for threshold substances, a DNEL is a level of exposure which should not be exceeded, indicating control of risks. For non-threshold substances, a DMEL is a risk-related reference value that should be used to better target risk management measures. Exposure levels below a DMEL are judged to be of very low concern, due to a high likelihood that effects are avoided for the particular ES under consideration.

A description of the derivation of DN(M)ELs, ESs, AFs and risk characterizations can be found under the toxicological information section listed above.

ECHA has different layers of information available, i.e. ECHA Info Cards (providing one-page summary) as well as disseminated dossiers containing detailed information for each relevant end-point using OECD-harmonized templates.

At the heart of the registration dossier is the Chemicals Safety Assessment (CSA) which addresses the manufacture of a substance and all the identified uses at all stages of the life cycle of the substance. It compares the potential adverse effects of a substance with the known or reasonably foreseeable exposure of man and/or the environment to that substance considering implemented and recommended risk management measures and operational conditions.

For higher tonnage substances, the database contains extensive information, including:

- Classification and Labelling and PBT Assessment
- Manufacture, Use and Exposure information, including uses advised against
- Physical and Chemical Properties Environmental Fate and Pathways
- Ecotoxicological Information
- Toxicological Information (includes human epidemiology information, if available)
- Analytical Methods
- Guidance on Safe Use

B4.5. Quality of the Underlying EHS Information

As has been described above, companies who manufacture/import/use chemicals are responsible for compiling and submitting the EHS information in the form of dossiers to support their REACH substance registrations. They are accountable for the accuracy of the information submitted.

Because of the technical complexity of REACH, the work of completing the dossiers and especially of conducting the CSAs, is usually done by professional eco- and mammalian- toxicologists, risk assessment experts, exposure scientists, industrial hygienists, occupational physicians and others who are either directly employed by the companies or by independent contractors who specialize in this work. Such experts usually take great pride in the quality of their work and often belong to pertinent professional societies, many of which have codes of ethical conduct to which they must adhere.

ECHA and the national authorities have various processes and procedures in place to check on the completeness and quality of the information submitted. They can require companies to conduct additional testing to fill data gaps, submit additional EHS information, re-do safety assessments and implement additional risk management, up to and including restricting or banning sales of substances that cannot be managed safely.

Once a registration dossier is submitted, ECHA performs a completeness check to ensure that all the information required for registration has been provided, and that the registration fee is paid before the registration number is issued. Registrants are required to jointly submit information on the hazardous properties of the substance, its classification and labelling and potential testing proposals and ECHA also enforces this during the completeness check. Registrants whose dossiers fail the check have a specified time to bring them into compliance or they may have to cease manufacture/import/use. During the completeness check, ECHA does not assess the quality or adequacy of the data submitted.

During the Evaluation step of REACH, ECHA and the Member States evaluate the information submitted by companies to examine the quality of the registration dossiers and the testing proposals and to evaluate if a given substance constitutes a risk to human health or the environment. Evaluation under REACH focuses on three different areas:

- Examination of testing proposals submitted by registrants (ECHA publishes every testing proposal that involves vertebrate animals and invites third parties to submit scientifically valid information or studies addressing the substance and hazard endpoints in question that could be considered by ECHA in preparing its decision on the testing proposal. The information has to be submitted within 45 days. The options for the draft decision area:
 - Acceptance of the testing proposal
 - Acceptance of the testing proposal with modifications of the testing conditions
 - Acceptance or rejection of the testing proposal but requiring one or more additional tests
 - Rejection of the testing proposal.
 - ECHA then adopts a decision based on the original proposal and the information submitted by third parties.)
- Compliance check of the dossiers submitted by registrants (ECHA may examine any registration dossier to verify if the information submitted by registrants is compliant with the legal

requirements. Compliance checks evaluate the substance identity description and the safety information in the dossier including the chemical safety report or specific parts of the dossier, for example the information related to the protection of human health. According to REACH, ECHA must check at least 5% of the registration dossiers of each tonnage band. Dossier selection for compliance check is either random or concern based (targeted). In the targeted compliance checks, ECHA evaluates only a specific part of the registration dossier (e.g. either specific endpoints in IUCLID or in the chemical safety report (CSR)) based on a specified concern. This allows ECHA to target endpoints which are identified as relevant for the safe use of substances.)

- Substance evaluation (Member States evaluate certain substances prioritized by ECHA, to clarify whether their use poses a risk to human health or the environment. The objective is to request further information from the registrants of the substance to verify the suspected concern, if necessary. The following options may address the concern:
 - A proposal for harmonized classification and labelling for carcinogenic, mutagenic or toxic to reproductions, respiratory sensitizers or other effects.
 - A proposal to identify the substance as a substance of very high concern (SVHC).
 - A proposal to restrict the substance.
 - Actions outside the scope of REACH such as a proposal for EU-wide occupational exposure limits, national measures or voluntary industry actions.)

An evaluation process may conclude that additional information is needed either to decide on a testing proposal, to clarify a concern on a substance or to bring a registration dossier into compliance with REACH. In the cases of compliance checks and testing proposal examinations, ECHA will draft a decision to request further information from registrants. In the substance evaluation process, the evaluating Member State will draft the decision.

Throughout the process, ECHA will ensure that the decision is finalized via the decision-making procedure established by REACH and that a harmonized approach is maintained for all evaluation cases.

The procedure also ensures that testing is tailored to real information needs. Therefore, the registrant cannot commence any testing or submit any new testing proposals until the decision on substance evaluation is finalized. However, if ECHA has taken or takes other parallel decisions as a result of dossier evaluation, registrants must perform the requested tests by the deadline given in the decisions.

Where a registrant or potential registrant disagrees with certain decisions issued by ECHA, he can appeal against the decision to ECHA's Board of Appeal.

Annually, ECHA must publish a report on the progress it has made over the previous calendar year on its obligations in relation to evaluation. ECHA is specifically required to include recommendations to potential registrants to foster improvement in the quality of future registrations, in these reports.

The Authorization process under REACH aims to ensure that substances of very high concern (SVHCs) are progressively replaced by less dangerous substances or technologies where technically and economically feasible alternatives are available. The route to authorization starts when a Member State or ECHA, at the request of the Commission, proposes a substance to be identified as an SVHC. Substances with the following hazard properties may be identified as SVHCs:

- Substances meeting the criteria for classification as carcinogenic, mutagenic or toxic for reproduction (CMR) category 1A or 1B in accordance with the CLP Regulation.

- Substances which are persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) according to REACH Annex XIII.
- Substances on a case-by-case basis, that cause an equivalent level of concern as CMR (e.g. endocrine disruptors) or PBT/vPvB substances.

The SVHC identification process includes a 45-day public consultation. Once a substance is identified as an SVHC, it is included in the Candidate List. ECHA maintains a database of Candidate List substances which also may be searched. As of 1 September 2018, there were 191 substances on that list. Registrants may have immediate legal obligations relating to risk management actions following the inclusion of a substance in the Candidate List.

Member States are ultimately charged with enforcing compliance with REACH. Each Member State has determined the penalties that would apply to the infringement of REACH provisions and must take all measures necessary to ensure that they are implemented. The penalties must be "effective, proportionate and dissuasive". The Member States had to notify their provisions to the European Commission and must also notify any subsequent amendment. ECHA has no enforcement responsibilities, however, it does host a Forum composed of representatives of national enforcement authorities, which works towards coordinating the enforcement of REACH and CLP in the EU Member States, Norway, Iceland and Liechtenstein.

B4.6. Procedures for Updating the Database with New Information

Registrants have an obligation to keep the information in the registration dossier submitted to ECHA up-to-date. They must consider their registration dossiers as "living documents" and regularly update them whenever new information is available or a need to improve the quality of data is identified. ECHA advises that special attention should be paid to the following areas of the registration dossier: substance identity, uses, exposure information and justifications for adaptations to information requirements and for using alternative methods.

If the composition of the substance changes, the registrant is obligated to inform ECHA, consider whether and how this change affects the intrinsic properties of the substance and resubmit an updated registration dossier that reflects all relevant changes.

Each year, registrants need to calculate their yearly tonnage as the average over the three preceding years. A registrant needs to update their registration without undue delay as soon as the 'annual or total quantities' they manufacture or import reach the next tonnage band threshold (i.e., >10 tonnes, >100 tonnes, > 1000 tonnes) as this may trigger additional EHS data collection requirements. As soon as the annual volume of a substance that has already been registered (regardless of its phase-in status before registration) reaches the next tonnage threshold, the manufacturer or importer has the duty to immediately inform ECHA of the additional data required.

After a registrant has submitted their registration dossier to ECHA they may realize that they made a mistake during its preparation such as citing faulty data in the CSA. In this case the registrant is obligated to, without undue delay, submit an amended dossier indicating in the dossier header the reason(s) why they are spontaneously updating it as well as the references of the previous valid submission (i.e. the "last submission number").

If the registrant becomes aware of information that could lead to other or different risks for human health or the environment caused by the substance they manufacture or import, such as monitoring data in the environment or epidemiological studies, they need to take those data into account and evaluate the appropriateness of the risk management measures put in place or recommended down the supply chain. New information triggering a revision of the CSA or the safety data sheet could also be the result of an international review such as International Programme on Chemical Safety (IPCS) review or an OECD dossier, or any kind of publication dealing with the release and exposure or hazard of the substance. Even if the initial registration has been completed accurately there will be an on-going need to update the CSA/CSR and the SDS as new or additional information on the risks of the substance becomes available that has an impact on the results of the CSA.

In some cases, even if higher level studies are not required by REACH, i.e. due to lower tonnage band, they still might be considered as necessary in the opinion of the registrant in order to control the risks arising from the manufacture and use(s) of the substance. In such a case when the registrant identifies the need to perform a higher-level study, they must submit to ECHA an update of the registration dossier including a specific proposal for this test, documentation showing that all non-animal methods have been considered and justification for proceeding to an animal study.

The registrant must also update their registration dossier as a consequence of an ECHA or a Commission decision under the evaluation procedure but also, when relevant, following any decision made in accordance with the authorization and the restriction processes. These updates must be submitted within the deadline specified by ECHA/the Commission in the decision.

Once an updated dossier is submitted to ECHA, they must undertake a completeness check within three weeks of the submission date.

B5. Canadian Government EHS Databases

The information presented below represents a summary of key information about the EHS information on industrial chemicals that is available from the Canadian government's efforts to assess and manage risks posed by exposures to them. There are three distinct databases that contain relevant EHS information on chemical substances:

- (1) results of Canada's efforts to categorize environmental or human health concerns of the 23,000 plus "existing substances";
- (2) results from screening level risk assessments conducted for the approximately 4,300 chemical substances that were determined after categorization as warranting further attention; and
- (3) risk assessment reports that are conducted on substances that have been added to the Canada's Priority Substances List (PSL).

For more detailed information, the reader should consult directly with the [Health Canada website](#).

B5.1. Overview/Description

In 2006, Canada completed a major task of systematically sorting through the approximately 23,000 "existing substances" in use in Canada between January 1, 1984 and December 31, 1986, when the original Canadian Environmental Protection Act was being created. The law calls these "existing substances," and they were registered on the Domestic Substances (DSL). By definition, substances newly manufactured or imported after 1994 are not included on the DSL, but have been and continue to be assessed by ongoing review processes.

Using information from industry, academic research and other countries, Canadian government scientists worked with partners in applying a set of rigorous tools to the 23,000 plus chemical substances on the DSL. They were categorized to identify those that were:

- inherently toxic to humans or to the environment and that might be:
 - persistent (take a very long time to break down), and/or
 - bioaccumulative (collect in living organisms and end up in the food chain)
- substances to which people might have greatest potential for exposure.

Additionally, substances considered a priority for assessment based on other health concerns were considered as part of this prioritization exercise.

Through categorization, the Government of Canada has identified approximately 4,300 of the 23,000 plus chemical substances on the DSL as meeting their criteria for further attention. Canadian experts have decided that many existing substances (roughly 19,000) do not need further action.

The chemical substances identified through the categorization process as needing a more thorough examination were also sorted to ensure those with the greatest potential for concern were examined first. The next step for these substances was to conduct a screening assessment, further research and, if needed, measures to control the use or release of a chemical substance. Among the actions taken for some of these substances was a determination that there is no risk to human health and the environment, and no additional risk management was warranted.

The Chemicals Management Plan (CMP) is a Government of Canada initiative aimed at reducing the risks posed by chemicals to Canadians and their environment. Approximately 4,300 substances were identified as requiring screening assessment following this prioritization exercise.

The core of the risk assessment work currently being conducted under the CMP is comprised of these approximately 4,300 prioritized substances, along with the annual receipt of 400 to 500 New Substance Notifications. Screening level assessments have been done on these substances and the results are summarized in Chemicals-at-a-glance sheets which are a series of short fact sheets about chemical substances and micro-organisms that are being (or have been) assessed in Canada for their possible risks to human health and the environment. The information sheets will be revised, from time to time, as substances move through the various technical and regulatory stages of the risk assessment and risk management processes.

The next phase (sometimes referred to as the third phase) of the CMP, launched in May 2016, will address the remaining 1,550 priority chemicals out of the original 4300 chemicals identified as priorities

during the categorization. The Minister of Health and the Minister of Environment and Climate Change have committed to addressing these chemicals by 2020.

B5.2. Scope of Chemicals Addressed

The CEPA categorization process pertained to a compilation of about 23,000 substances used, imported or manufactured in Canada for commercial purposes between January 1, 1984, and December 31, 1986 (before CEPA came into existence), at a quantity of greater than 100 kilograms per year. It includes discrete organic compounds, inorganic substances, organometallic substances, polymers, and unknown or variable composition complex reaction products or biological material such as acetone or iron.

B5.3. Ease of Access and Use of Chemical Information

B5.3.1. Categorization Results

Searches of the [categorization results database](#) may be done by entering a chemical name and the CAS (Chemical Abstracts Service Registry) number to obtain categorization results for a particular substance. A number of pre-set searches are provided, to narrow the search results to smaller, more specific categories, such as Ecological Categorization Results, Human Health Categorization Results and others.

B5.3.2. Screening Level Assessment Results

[Chemicals-at-a glance sheets](#), which are a series of short fact sheets about chemical substances and micro-organisms that are being (or have been) assessed in Canada for their possible risks to human health and the environment, are available.

This database is not searchable and the user must scroll down the page to look for the name of their chemical substance of interest. A click on the name of the substance or microorganism produces a fact sheet that is written in layman's language.

B5.3.3. Risk Assessment Reports for Priority Substance List Chemicals

Risk assessments conducted on 44 PSL1 and 25 PSL2 substances can be found on the website. The PSL1 and PSL2 Lists are not searchable, but users can locate the chemical name of interest by scrolling down the page to find a match. Downloadable files containing the risk assessments are accessed by clicking on the substance name.

B5.4. Breadth and Depth of EHS Information Available

B5.4.1. Categorization Results

This Database contains the categorization results for substances on the Canadian Domestic substance list and the supporting data on:

- Inherent toxicity
- Persistency

- Bioaccumulation

These results state, for each substance, whether or not it meets the Government of Canada criteria for categorization, and if so, whether the decision was made based on environmental or human health concerns (or both). In addition, the results show which environmental categorization criteria were met for each substance (in other words, the basis on which the decision was reached).

B5.4.2. Screening Level Assessment Results

Chemicals-at-a glance sheets are written in layman's language and generally provide answers to the following questions:

- What is it?
- How is it used?
- Why is the government of Canada assessing it?
- How are Canadians exposed to it?
- What are the results of the assessment?
- What is the government of Canada doing?
- What can Canadians do?

B5.4.3. Risk Assessment Reports for Priority Substance List Chemicals

The complexity and the depth of assessments can vary depending on the specific type of assessment. PSL Assessments are usually fairly comprehensive and include:

- Substance identity
- Physical chemical properties,
- Use patterns and sources,
- Releases to the environment,
- Environmental fate,
- Persistence and bioaccumulation potential,
- Human health exposure characterization,
- Quantification of potential adverse effects on human health and/or non-human organisms resulting from exposure to various concentrations, doses or intake rates of a substance through the exposure pathways identified in the exposure assessment,
- Risk characterization,
- Uncertainties,
- References.

B5.5. Quality of the Underlying EHS Information

Using information from Canadian industry, academic research and other countries, Canadian government scientists work with partners in applying a set of rigorous tools to conduct categorization, screening level assessments and risk assessments for priority list substances.

The available EHS information and assessment reports have been peer-reviewed by the governmental authorities and/or independent Canadian or international experts. Details of the peer-review process can be found in the introduction of each report. Additionally, under the CEPA 1999, the assessment reports are subject to a mandatory 60-day public comment period in which the assessments are

published on the Departmental websites permitting comments from the public, stakeholders and concerned groups on the scientific findings.

B5.5.1. Screening Level Assessment Results

A screening assessment is conducted to determine if a substance is toxic or capable of becoming toxic. It is not intended to represent an exhaustive or critical review of all available data. Rather, it presents the most critical studies and lines of evidence pertinent to the conclusion. A screening assessment is fit-for-purpose, in that it may address one to hundreds of substances and will follow an approach that is most appropriate for the substance(s). Screening assessments can range from simple to very complex technical analyses. Screening assessments include a regulatory conclusion on the substance(s).

B5.5.2. Risk Assessments for Priority Substance List Chemicals

All risk assessments are based on sound-science, consider multiple lines of evidence and uncertainties, and apply precaution. Furthermore, they are all conducted to evaluate the potential of a substance or a group of substances to cause harm to Canadians and/or the Canadian environment. A weight-of-evidence approach and precaution are applied throughout the assessment process. The risk assessment program under CEPA is conducted in collaboration by both Environment Canada and Health Canada.

B5.6. Procedures for Updating the Database with New Information

B5.6.1. Categorization Results

The Government of Canada is responsible for the content of their database containing Categorization Results from the Canadian Domestic Substance List. Categorization was completed in 2006 and the data is not planned to be updated.

B5.6.2. Screening Level Assessment Results

Chemicals-at-a-glance information sheets are revised, from time to time, as substances move through the various technical and regulatory stages of the risk assessment and risk management processes.

B5.6.3. Risk Assessments of Priority Substance List Chemicals

Canada describes multiples ways in which it acquires new information that may update prior risk assessments or which may affect the prioritization of substances for future risk assessments.

Such information can come from a variety of sources, including:

- provincial/territorial and international organizations;
- through participation in a variety of international activities and relationships with other national regulators;
- partnerships with the OECD which facilitate co-operation in the area of information and data sharing with other member countries;
- monitoring of publicly available information sources;
- work done by government scientists to generate new data;
- attendance at scientific conferences;
- industry;

- health and environmental organizations;
- the public.

On a continual basis, staff at Environment Canada and Health Canada review the new information obtained on substances for indications of imminent and/or widespread potential for harm. Generally, the development of scientific knowledge is incremental and iterative, so it is unlikely that a single new piece of information collected in this process would prompt immediate intervention; however, if this type of information were acquired, mitigating action would be pursued in a timely manner.

The most typical evaluation process is the result of a periodic analysis of the information that has been acquired. A series of factors are considered and weighed, and judgments made on the relative importance of different indicators. Evaluation can be complex, as substances will have entirely different types of information available and prior activities on a substance are considered. Prioritization decisions are guided by a set of principles and considerations.

B6. Japanese Government EHS Databases

The information presented below represents a summary of key information about the EHS information on industrial chemicals that is available from the Japanese government's efforts to assess and manage risks posed by exposures to them. An excellent overview of Japan's approach to chemicals management has been published.

There are three databases that contain relevant EHS information on chemical substances:

- (1) Japan CHEmicals Collaborative Knowledge (J-CHECK) database
- (2) CHEmical Risk Information Platform (CHRIP®)
- (3) Japan Existing Chemicals Database (JECDB)

More detailed information is available about Japan's approach to managing chemicals.

B6.1. Overview/Description

During the 1950's and 1960's, Japan experienced several serious environmental pollution problems with methylmercury and polychlorinated biphenyls (PCB) which raised societal awareness of the need for enhanced chemical safety management both domestically and globally. As a direct consequence, in 1973 Japan enacted new legislation, the Chemical Substances Control Law (CSCL), which was intended to prevent pollution by chemical substances with similar properties to PCBs, including high persistency, high accumulation, and long-term toxicity. It also established requirements for newly manufactured or imported chemical substances so that their safety would be assessed before import and/or introduction to the market, and those with PCB-like properties are regulated for their manufacturing, import and use.

Pollution of ground water caused by chlorinated solvents, including trichloroethylene, was recognized in the 1970's and this led to greater strengthening of the CSCL in 1986 to include the regulation of chemical substances that are not highly accumulative, but that are persistently toxic.

In 2003, CSCL was further amended to stay abreast of international trends and current OECD recommendations on chemical management. Thereby an assessment and regulation system was introduced to focus on the impact of chemical substances on flora and fauna, and the possibility of discharges into the environment.

The Japan Chemicals Management Center (CMC) provides technical support to ensure appropriate operation of the law under the jurisdiction of the Ministry of Health, Labor and Welfare (MHLW), the Ministry of Economy, Trade and Industry (METI), and the Ministry of the Environment (MOE).

CMC promotes the efficient assessment of new chemical substances through its database on safety inspection and the assessment results of new chemical substances that are specified in the CSCL. In addition, the CMC has developed a database that facilitates information sharing between three key government authorities, MHLW, METI, and MOE. By utilizing the database, the CMC investigates the information required for the assessment of new chemical substances and compiles assessment materials on chemical safety.

In addition, the CMC also functions as a consultation and liaison organization between the three ministries and business operations engaged in the "notification" process for new chemical substances. The CMC receives inquiries from business operations prior to notification, and conducts interviews during the process of notification. The CMC also assigns officially prepared names to new chemical substances.

B6.1.1. Operations related to Good Laboratory Practice (GLP)

The CSCL stipulates that any safety inspection data used to assess new chemical substances should be obtained from testing facilities conforming to Good Laboratory Practice (GLP). The CMC conducts the inspections of GLP facilities to assure reliability of test results and international compatibility.

B6.1.2. Other operations related to observance and enforcement of the CSCL

To be able to manufacture or import any new chemical substances, business operators need to make their notification of the new chemical substances under the CSCL as well the Industrial Safety and Health Act. The names of these substances are designated according to each of the laws. Though their designated names are given based on the IUPAC (International Union of Pure and Applied Chemistry) nomenclature system, there may be multiple naming conventions for the same chemical structure, so a single chemical substance may be designated with different names. Therefore, the CMC supports the creation of the commonality rules of the nomenclature between the Industrial Safety and Health Act and the CSCL in collaboration with MHLW and METI.

In addition, the CMC also compiles study reports on the relations between bioconcentration and n-octanol/water (log POW), and between bioconcentration and molecular weight, and submits them to the Chemical Substances Council to contribute to the review of assessment standards. These contributions ensure that prompt and proper assessment procedures are implemented.

B6.1.3. Operations related to risk assessments

The CMC supports operations related to risk assessments under the CSCL, which require the knowledge of chemical substances and assessment methods. The CMC supports the enforcement of the CSCL by the state as the core institution of risk assessments under the CSCL by performing "confirmation and aggregation of the notified data, etc. of annual manufacturing and import volumes according to the CSCL," "arrangement of emission factors to estimate the released amounts into the environment and estimations of the released amounts," "estimation of exposure doses and risks to human and ecosystems," etc.

B6.1.4. Operations related to the utilization of (Quantitative) Structure-Activity Relationship ((Q)SAR) and category approaches

In order to ensure safe and efficient chemical management in Japan, the CMC makes efforts to develop hazard assessment methods based on (Q)SAR and category approaches.

The CMC also summarizes the results of predictions of biodegradation/bioconcentration of new chemical substances and existing chemical substances subject to the reviews of the CSCL by various (Q)SAR models and category approaches, and submits them as review reference materials to the committee of the CSCL.

CMC reports the following covers progress in recent safety programs for existing and new chemicals.

Under CSCL, the manufacture or import of new chemicals must be submitted to the designated country agencies, which then examine the chemicals on the basis of the submissions. MHLW examines toxicity and METI examines decomposition and accumulation.

With respect to toxicity examination, the data from two kinds of genetic toxicity tests (both bacterial and non-bacterial in vitro tests) and a 28-day repeat dose toxicity test are submitted for initial screening by the expert committee on chemicals of the living environment council. After this examination, any chemical which is difficult to decompose, tends to accumulate and may be harmful to human health with chronic exposure is classified into "Class I specified chemical substances", while those which have low accumulation but do not readily decompose corresponding to those which may be harmful to human health when continually taken, are classified into "Designated chemical substances". The hazard potential of some designated chemical substances are examined as deemed necessary from the environmental point of view. Some of them are placed in the "Class II specified chemical substances" category. New chemicals are all assessed for safety assurance through the above described prior examination system.

The "Class I specified chemical substances" category contains 9 substances including PCB, chlordane and tributyltin oxide. The "Class II specified chemical substances" category designates 23 substances including trichloroethylene, tetrachloroethylene, carbon tetrachloride, 7 triphenyltin compounds and 13 tributyltin compounds. Moreover, the "Designated chemical substances" category contains 257 substances including chloroform.

In Japan, it is estimated that about 23,000 chemicals with production or import above 1 tonne per annum are now on the market. About 19,000 of them were already on the market before establishment

of the CSCL, requiring safety examination through a series of toxicity tests. These chemicals have successively been examined by the responsible agencies and classified into the "Class I specified chemical substances" category as appropriate.

In addition to the OECD HPV chemicals testing program described earlier (see Chapter on OECD Existing Chemicals SIDS), Japan has had its own HPV program, and all such widely used chemicals have had a SIDS assessment.

In Japan, the Biological Safety Research Center, National Institute of Health Sciences, plays a leading role in conducting the safety tests and classifying chemicals which may affect human health into Designated chemical substances or Class II specified chemical substances. The results of the safety tests are announced in the annual reports of the Biological Safety Research Center, National Institute of Health Sciences and in scientific journals where appropriate.

Article 3 of the Law for the Control of Household Products Containing Harmful Substances stipulates responsibilities of manufacturers and importers to secure safety of household products. They must study chemicals which are contained in household products and how they might affect human health, and take measures to prevent injury caused by such chemicals. Thus, the law prescribes that manufacturers and importers must have a full understanding of the manufacturing methods of household goods, chemicals contained therein and their toxicity. Moreover, the law designates harmful chemicals from the view of human health and prescribes standards for allowable contents of chemicals and containers of the products. Sales of products which do not meet the standards are prohibited. Contents and containers have been prescribed for 17 chemicals.

Surveillance officers in each city or prefecture strictly check and survey the household products which are sold in the departments, supermarkets and retail stores, for the above standards, and give instructions where appropriate.

Groups of manufacturers and importers in relevant industries have been promoting self-support efforts in safety programs in order to prevent injury caused by chemicals in household goods. The MHLW welcomes voluntary standards for safety assurance, so the MHLW provides guidance and advice for the establishment of such standards, which are already in place for household goods such as wet wipes, bacteria and mildew removal agents for home use, insecticides for home use, rinsing agents for home use, spot removers for home use, perfumes/deodorants/deodorizers, bacteria and mildew proof agents for home use, and rinsing agents and/or preservatives for contact lenses.

The standards generally include ingredients, contents, quality control such as test items for quality assurance, labeling, containers and manufacturing processes. Moreover, some voluntary standards indicate the use of certification marks.

The Material Safety Data Sheet (MSDS) system was established, effective as from April 1993, by MHLW, METI and MOL, in order to enhance safety for treatment of chemicals. The system requires manufacturers and importers to prepare MSDSs and deliver them to their downstream customers and processors. The MSDS should contain information on safety procedures for chemicals which present a danger or hazard in items of explosion, ignition and acute/chronic toxicity properties. The information includes the name of the product, types of danger or hazard, treatment in case of emergency, treatment in case of a fire, notes for treatment and storage, preventive measures for exposure and notes for disposal.

CMC owns and manages the J-CHECK and CHemical Risk Information Platform (CHRIP®) databases.

J-CHECK is a database developed to provide the information regarding CSCL, such as the list of CSCL substances, chemical safety information obtained in the existing chemicals survey program, risk assessment, etc. in cooperation with eChemPortal by OECD.

CHRIP® feeds information to J-CHECK, and is directed at companies operating in Japan, municipalities and citizens. CMC collects the reliable information on the domestic and foreign laws and regulations related to chemical management and the risks of chemical substances. It provides this information through CHRIP® for compliance with the chemical management laws and regulation by business operators, municipalities, and people and appropriate assessments and voluntary management of risks. CMC provides the general information such as the name, CAS Registry Number, etc. of chemical substances, domestic and foreign laws and regulations information, hazard information, and exposure-related information. CMC confirms and updates the listed data regularly, and secures the reliability of the database.

MHWL manages the JECDB database which includes results of toxicity screening tests for both Japan's existing chemicals safety program and the OECD HPV chemicals program.

B6.2. Scope of Chemicals Addressed

The focus of these databases is on what the Japanese government estimates are the 23,000 industrial chemicals produced or imported above 1 tonne per annum that are on the market.

B6.3. Ease of Access and Use of Chemical Information

J-CHECK

Search capabilities

- List and classification of CSCL
- List of Japan HPV Challenge program
- CAS Registry Number
- MITI number
- Chemical Substance name (Exact match, Substructure match)
- Search by structure
- Regulatory Classification
- Endpoints

User instructions for conducting searches of J-CHECK are available online.

CHRIP®

Users can search the comprehensive information on a target chemical substance (information on hazardous property/hazard assessments or regulations, etc.) by entering its number or name as a keyword.

Searches may be done by using the following item as a keyword.

- CHRIP_ID
- Chemical Substance Name
- CAS No.
- MITI No.
- ISHA No.
- EC No.
- UN No.

The controlled chemical substances by each law or the assessed substances by each organization, etc. will be displayed in an individual list. Specifying a substance on a list, you can also see comprehensive information (contains information on hazard assessments or regulations, etc.). Search instructions are available.

JECDB

A search is available by CAS Registry Number, by Name, by Toxicity test. The user may also browse a list of chemical substances tested and a list of toxicity test reports.

A user's guide could not be located to help with searches, however, the search process appears rather intuitive.

B6.4. Breadth and Depth of EHS Information Available

J-CHECK

Environmental Hazard information

- Biodegradation
- Bioaccumulation
- Partition coefficient
- Algae growth inhibition test
- Daphnia Acute Immobilization test
- Daphnia Reproduction test
- Fish Acute toxicity test
- Fish prolonged toxicity test
- Fish early life stage toxicity test
- Other tests, if available

CHRIP®

The information related to the selected substance is displayed in a tree format and includes the following:

- Substance Identity and Structure
- Chemical Hazard and Risk Information
- GHS Classification according to the Japanese government.
- Hazard and Risk Assessment Reports from other Countries

JECDB

JECDB makes available the mammalian toxicity test reports from Japan's existing chemicals safety program. Each report consists of the nomenclature of the chemical, abstracts and summarized data from the studies in English. Individual study reports are available in Japanese.

For each chemical, results are compiled from several studies, including, in most cases, a single dose toxicity test, a 28-day repeat dose toxicity test, a reproductive/developmental toxicity test and mutagenicity tests.

B6.5. Quality of Underlying EHS Information**J-CHECK**

Not all data of Existing Chemicals Survey Program Conducted by the Japanese Government are peer reviewed. Data of Japan HPV Challenge Program are not reviewed.

CHRIP®

CHRIP® provides reliable data published by national and international authorities. As of this writing, it contains EHS information on approximately 250,000 substances. The quality of the database is ensured by regular updates performed once every two months, and by a continual verification process.

JCEDB

JCEDB provides toxicity test information for approximately 350 chemical substances. All the toxicity tests reported were performed in accordance with the test methods in which new chemicals should be tested for submission to the country agencies under the Law concerning Examination and Regulation of Manufacture, etc. of Chemical Substances, and each guideline of the OECD chemicals programs.

The study results are reviewed by scientists from the Japan National Institute of Health Sciences and other institutes

Users are free to utilize and cite the results of the existing chemicals survey conducted by the three Ministries for any purpose. At the time of citation, users must be aware of the following:

- The user must clearly state that the information cited by him/her is referred to the results of existing chemicals survey conducted by the Japanese Government.
- The user shall be responsible for any losses that may occur through the use of the information.

B6.6. Procedures for Updating the Database with New Information**J-CHECK**

Maintenance of the database is the responsibility of the National Institute of Technology and Evaluation (NITE).

CHRIP®

Maintenance of the database is the responsibility of NITE. The quality of the database is ensured by regular updates performed once every two months, and by a continual verification process.

JECDB

Maintenance of the database is the responsibility of MHLW. Unfortunately, the English abstracts summarizing the available test data on each substance do not list a calendar date; and no update procedures could be located.

B7. USEPA Databases

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the United States Environmental Protection Agency (USEPA).

Specific databases reviewed in this section include:

- ChemView
- ACToR and ToxCast Dashboard
- Integrated Risk Information System (IRIS); and
- Substance Registry Services (SRS)

For more detailed information, the reader should consult directly with the [EPA website](#).

B7.1. Overview/Description

Under the Toxic Substances Control Act (TSCA), the Frank R. Lautenberg Chemical Safety for the 21st Century Act, and the Pollution Prevention Act, USEPA evaluates potential risks from “new” and “existing” chemicals and finds ways to prevent or reduce pollution before it gets into the environment.

USEPA classifies chemical substances as either “existing” chemicals or “new” chemicals. “Existing” chemicals are chemicals that were already in commerce when TSCA was enacted in 1976 or chemicals that have undergone a Pre-Manufacture Notification (PMN) review and are listed on the TSCA Inventory. Any substance that is not on the TSCA Inventory is classified as a “new” chemical. Prior to manufacture (including import) of a new chemical for general commercial use, a notice must be filed with USEPA.

New Chemicals

USEPA's New Chemicals program helps manage the potential risk to human health and the environment from chemicals new to the marketplace. The program functions as a “gatekeeper” that can identify conditions, up to and including a ban on production, to be placed on the use of a new chemical before it is entered into commerce.

The PMN Program to review new chemicals has evolved into an efficient mechanism for identifying those new chemicals which are of greatest concern early on in the 90-day review process. A detailed analysis is focused on these cases with the ultimate goal of identifying and controlling unreasonable risks. EPA uses an integrated approach that draws on knowledge and experience across disciplinary and

organizational lines to identify and evaluate concerns regarding health and environmental effects, exposure and release and economic impacts.

Following receipt of a PMN or exemption notice, USEPA scientists and program managers meet to evaluate the notice and the notice undergoes the following steps in the Agency's 90-day review process. USEPA groups PMN chemicals with shared chemical and toxicological properties into categories in order to streamline the process for Agency review of new chemical substances. USEPA has developed assessment methods, databases, and predictive tools to help evaluate what happens to chemicals when they are used and released to the environment and how workers, citizens, and the environment might be exposed to and affected by them. These tools may be helpful when laboratory studies or monitoring data are not available or need to be supplemented. The New Chemicals Program is actively carrying out USEPA's strategy to prevent pollution before it can occur. The New Chemicals Program strongly encourages industry efforts to prevent pollution.

USEPA may make one of several different decisions upon completion of its PMN review:

- a determination that a new chemical or significant new use is not likely to present an unreasonable risk of injury to health or the environment, without consideration of costs or other non-risk factors, including an unreasonable risk to a potentially exposed or susceptible subpopulation under the conditions of use.
- a determination that a new chemical or significant new use presents unreasonable risk of injury to health or the environment without consideration of cost or other non-risk factors, including an unreasonable risk to a potentially exposed subpopulation under the conditions of use, USEPA may (a) limit the amount manufactured/processed/distributed in commerce or impose other restrictions on the substance via an immediately effective proposed rule under section 6 of TSCA, or (b) issue an order to prohibit or limit the manufacture, processing or distribution in commerce to take effect on the expiration of the applicable review period.
- issue a Significant New Use Rule (SNUR) for new chemicals following the Agency's review or during they review period. Promulgation of a SNUR can be an effective and efficient way to address reasonably foreseen conditions of use about which USEPA has concerns, as part of the basis for them to conclude that the chemical is not likely to present an unreasonable risk of injury to health and the environment under the conditions of use. A SNUR requires that any manufacturer or processor – including the PMN submitter – who intends to undertake the activities subject to the SNUR must submit to EPA a significant new use notice (SNUN). EPA must either conclude, following review of a SNUN, that the activities are not likely to present an unreasonable risk, or take appropriate action to protect against any unreasonable risk. The review would factor in the conditions of use of the chemical specifically associated with the significant new use and, as appropriate, any other conditions of use relevant to the evaluation of the significant new use of the chemical substance within the applicable review period. The review of the SNUN would be the same as described above.
- a determination that:
 - the information in the PMN is insufficient to allow the Agency to make a reasoned evaluation of the health and environmental effects of the new chemical substance or the significant new use,
 - or
 - in the absence of sufficient information, the manufacture, processing, distribution in commerce, use or disposal of the chemical may present an unreasonable risk to health or the environment, or

the chemical substance is or will be produced in substantial quantities and will either enter the environment in substantial quantities or there may be significant or substantial human exposure to the substance.

Should USEPA make one of these determinations, then they must issue an order under TSCA section 5(e). These orders are typically issued on consent. A section 5(e) order typically contains some or all of the following requirements as conditions:

- Testing for toxicity or environmental fate once a certain production volume or time period is reached
- Use of worker personal protective equipment
- New Chemical Exposure Limits (NCELs) for worker protection
- Hazard communication language
- Distribution and use restrictions
- Restrictions on releases to water, air and/or land, and
- Record-keeping.

Existing Chemicals

TSCA, as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act, requires USEPA to evaluate the safety of “existing” chemicals via a three-stage process. The three stages of EPA’s process for ensuring the safety of existing chemicals are prioritization, risk evaluation, and risk management. The statute also includes a variety of new EPA authorities to drive forward progress on evaluating and ensuring the safety of existing chemicals.

The first step in USEPA’s process for evaluating the safety of existing chemicals is prioritization. Prioritization is a risk-based screening process for designating chemical substances as either High-Priority Substances for risk evaluation, or Low-Priority Substances for which risk evaluation is not warranted at the time. TSCA requires USEPA to give certain preferences to prioritizing chemicals on the 2014 TSCA Work Plan, to consider certain criteria such as hazard/exposure, persistence and bioaccumulation, but otherwise does not significantly limit USEPA’s discretion to choose which chemicals enter the prioritization process. TSCA further prohibits USEPA from considering non-risk factors (e.g., costs/benefits) during prioritization. Once initiated, the process provides stakeholders with ample notice of any USEPA risk evaluation activity, as well as two opportunities for the public to submit relevant information to the Agency. The process has been designed to ensure that the Agency’s limited resources are focused on chemicals with the greatest potential for risk.

Chemical substances with low hazard and/or exposure that meet the definition of Low-Priority Substances are taken out of consideration for further assessment at this time. This gives the public notice of chemical substances for which the hazard and/or exposure potential is anticipated to be low or nonexistent, and provides insight into which chemical substances are likely not to need additional evaluation and risk management.

The second step in USEPA’s process for evaluating the safety of existing chemicals is risk evaluation. If USEPA designates a chemical as a High-Priority Substance, the chemical moves immediately to the risk evaluation phase. At the conclusion of the risk evaluation phase, USEPA must use the risk evaluation as a basis to determine whether or not the chemical presents an unreasonable risk to health or the environment under the chemical’s conditions of use. TSCA prohibits USEPA from considering non-risk factors (e.g., costs/benefits) during risk evaluation. This includes risks to subpopulations who may be at greater risks than the general population, such as children and workers. The risk evaluation process has the following components:

- a scope document that provides the public with information on the focus of the risk evaluation;
- hazard and exposure assessments and a risk characterization to inform the risk determination; and
- a risk determination stating whether or not a chemical substance presents an unreasonable risk to health or the environment under its conditions of use.

In addition to USEPA's prioritization process, TSCA allows manufacturers to request that USEPA conduct a risk evaluation on a particular chemical. When this happens, manufacturers are required to provide USEPA with the information necessary to conduct a risk evaluation on those conditions of use that are of interest to them. Like the prioritization process, the risk evaluation process affords opportunities for public comment and submission of relevant information.

The third step in USEPA's existing chemicals process is risk management. If at the end of the risk evaluation process, USEPA determines that a chemical presents an unreasonable risk to health or the environment, the chemical must immediately move to risk management action under TSCA. USEPA is required to implement, via regulation, regulatory restrictions on the manufacture, processing, distribution, use or disposal of the chemical to eliminate the unreasonable risk. USEPA is given a range of risk management options under TSCA, including labeling, record-keeping or notice requirements, actions to reduce human exposure or environmental release, and a ban of the chemical or of certain uses. Like the prioritization and risk evaluation processes, there is an opportunity for public comment on any proposed risk management actions.

ChemView

ChemView is a database that provides one-stop shopping for information on chemical health and safety data received by USEPA and USEPA's assessments and regulatory actions for specific chemicals under TSCA. ChemView contains no confidential business information (CBI). ChemView contains information USEPA receives and develops about chemicals including those on USEPA's Safer Chemical Ingredient List. USEPA is populating the ChemView database in phases, and it currently contains information on 12,000 chemicals. ChemView provides key information in a layered summary format and provides links to underlying studies or other source documents.

ACToR, Chemistry Dashboard and ToxCast Dashboard

ACToR compiles data (both quantitative and qualitative) from a large number of sources (called data collections), including USEPA databases, PubChem, other NIH and FDA databases, state and other national sources, and from academic groups. One novel data collection is ToxRefDB, which includes detailed information on in vivo guideline study results for pesticides and other potentially toxic chemicals that has been assembled by the National Center of Computational Toxicology. ACToR is also the primary repository of data being produced by the EPA ToxCast chemical prioritization program.

Thousands of chemicals are currently in use, and hundreds more are introduced into commerce every year. Due to the time and resource intensive nature of chemical safety testing, only a small fraction of chemicals has been thoroughly evaluated for potential human health effects. Through its computational toxicology research, the USEPA is developing ground- breaking approaches to change how chemicals are evaluated for potential health effects.

The foundation of chemical safety testing relies on chemistry information such as high-quality chemical structures and physical chemical properties. Chemical structures and properties are used in computational models to predict a range of hazard, pharmacokinetic, and exposure- related endpoints that are necessary to understand potential health risks. The USEPA has recently expanded and curated

its chemical structure and physicochemical property database. The public can now access these data through the Chemistry Dashboard. The Chemistry Dashboard is part of a suite of dashboards to enable stakeholders to interact with a variety of safety-related data being collected and collated on the thousands of chemicals in use. The Chemistry Dashboard provides access to a variety of information on over 700,000 chemicals currently in use.

Another publicly available Dashboard is the ToxCast Dashboard. The ToxCast Dashboard provides access to data from automated chemical screening technologies, called “high-throughput screening assays,” that expose living cells or isolated proteins to chemicals to determine potential biological activity. The ToxCast Dashboard helps users access and visualize the data generated from high-throughput screening data in order to help inform decisions related to potential chemical risks. It helps users examine high-throughput assay data to inform chemical safety decisions.

To date, the ToxCast Dashboard has data on over 9,000 chemicals and information from more than 1,000 high-throughput assay endpoint components. Users of the ToxCast Dashboard can explore the data from a chemical or an assay viewpoint. Once the user selects the chemicals and assays of interest, they can then explore the biological activity for the chemical-assay combinations. Results from the selections are shown with tables, graphs and charts that can be downloaded by the user.

USEPA’s ToxCast effort contributes to the Toxicology in the 21st Century (Tox21) federal agency consortium. Through Tox21, the USEPA, National Toxicology Program at the National Institute of Environmental Health Science, the National Institutes of Health’s National Center for Advancing Translational Sciences, and the Food and Drug Administration are using robotic technology to screen tens of thousands of chemicals. These approaches have generated vast amounts of data on thousands of chemicals.

IRIS

USEPA’s IRIS Program supports their mission by identifying and characterizing the health hazards of chemicals found in the environment. Each IRIS assessment can cover a chemical, a group of related chemicals, or a complex mixture. USEPA has numerous guidance documents available for conducting IRIS assessments. IRIS assessments are the preferred source of toxicity information used by USEPA and an important source of toxicity information used by state and local health agencies, other federal agencies, and international health organizations

The IRIS Program is located within USEPA’s National Center for Environmental Assessment (NCEA) in the Office of Research and Development (ORD). The placement of the IRIS Program in ORD is intentional. It ensures that IRIS can develop impartial toxicity information independent of its use by USEPA’s program and regional offices to set national standards and clean up hazardous sites.

SRS

The Substance Registry Services (SRS) is USEPA’s authoritative resource for information about chemicals, biological organisms, and others substance tracked or regulated by USEPA. The SRS makes it possible to identify which USEPA data systems, environmental statutes, or other sources have information about a substance and which synonym is used by that system or statute. It becomes possible therefore to map substance data across EPA programs regardless of synonym.

B7.2. Scope of Chemicals Addressed

Although USEPA has authority to regulate a wide range of substances, for the purposes of the current project the interest is restricted to their authority under TSCA. The scope of TSCA is restricted to chemical substances which are manufactured, imported, or processed “for a commercial purpose”.

Excluded from scope are drugs, tobacco, nuclear materials, munitions, food additives, cosmetics or chemicals used solely as pesticides.

The substance may have a conditional or limited exemption if:

- it is formed solely as the result of manufacture (or import) of an article; manufactured solely for export, formed by an incidental reaction or end-use reactions; or a mixture, impurity or naturally-occurring material, by-product, or non-isolated intermediate.
- it is manufactured or imported in small quantities solely for research and development.
- it is manufactured (and imported) in quantities of less than 10,000 Kilograms per year.
- it has low environmental release and low human exposure during its manufacture, distribution, processing, use and disposal.
- it is manufactured (including imported) solely for test marketing.
- it is a polymer.

B7.3. Ease of Access and Use of Chemical Information

ChemView

USEPA has published a User’s Guide to make it easy to search the ChemView database. Searches may be done by:

- Chemical Name or Identifier (including CAS, Accession, or PMN numbers)
- Use (52 separate categories)
- Functional use and use categories for Significant New Use Notification (20 separate categories)
- Chemical Group (8 separate categories)
- Effects/Endpoints (5 separate categories of health or environmental effects)

Output selections include:

- Data Submitted to USEPA
- USEPA Assessments
- USEPA Actions
- Manufacturing, Processing, Use, and Release Data Maintained by USEPA

ChemView can be used to:

- Tailor a search by using various combinations from the criteria listed above
- Identify chemicals by searching for certain health effects (endpoints)
- Compare data for multiple chemicals
- Identify specific actions USEPA has taken on the chemical
- Export data for additional analysis
- Identify and view documents on safer chemical ingredients
- Identify and view TSCA-related information
- Obtain source documents
- Identify and view information provided by the USEPA and other federal organizations

ChemView's expands its search capabilities to include the Other Sources tab. The public is able to gain access simultaneously to searches of reports and dataset information provided by other federal organizations via ChemView. This expanded search allows users to view, compare, and analyze multiple source chemical data, increasing safer chemical decision-making. Other Sources currently holds datasets from six federal government related data portals, including:

- NIH's ChemIDPlus
- OSHA's Occupational Chemical Database
- PubChem
- NIH's Chemical Effects in Biological Systems (CEBS)
- USEPA's TRI Pollution Prevention activity search tool
- USEPA's ECOTOX knowledge-base

If a search of ChemView does not produce results for a particular chemical, it does not mean USEPA does not have information on that chemical; the data may not be posted yet, but will be available in the future as USEPA continues to populate the database.

ACToR, Chemistry Dashboard and ToxCast Dashboard

ACToR is searchable by chemical name, CAS#, or structure. Users may browse assays by toxicity, category, or data collection. To get the best possible experience using the ACToR application users are advised to use Mozilla Firefox, Google Chrome or Mac OS Safari.

The Chemistry Dashboard (name changed recently to CompTox Dashboard) includes search capabilities allowing the user to filter results by chemical name, mass or molecular formula, or by chemical identifiers including CAS#, systematic and common names, and InChIKeys. If data relevant to a search query is identified in the database, a detailed results page with associated information for the chemical is generated. In addition, the Chemistry Dashboard has a series of navigation tabs providing access to additional chemical information including Physical Properties, External Links to additional resources, Synonyms, Biological Activities, Articles, and Patents. USEPA has created a [video tutorial](#) to assist those wishing to conduct advanced searches of the Chemistry Dashboard database.

ToxCast users can select chemicals of interest using a number of filters. Chemical data filters include CAS #, chemical name, chemical category, use category, and physicochemical properties such as the octanol-water partition coefficient (log POW)

IRIS

The [IRIS database](#) can be found on the EPA website. It can be searched by Chemical Name, CAS# or Keyword or by Noncancer or Cancer, Route of Exposure, Organ/System Affected, Toxicity Value Noncancer, Uncertainty Factor Value, Weight of Evidence Carcinogenicity, and Toxicity Value Cancer. Searches using filters for organ/system affected are limited to effects (or tumor sites) used to derive the RfD, RfC, oral slope factor, or inhalation unit risk. Other effects associated with chemicals in the IRIS database that were not used as the basis for a toxicity value are not searchable with organ/system filters. IRIS Advanced Search searches only final IRIS assessments; draft assessments are available online.

SRS

The [SRS database](#) may be searched by chemical, substance, or biological name or ID (CAS #, EPA ID, TSN, or internal tracking number) by single entry or multiple entries or by chemical/substance lists. USEPA has a number of published resources available to assist with searches of the database.

B7.4. Breadth and Depth of EHS Information Available

ChemView

ChemView provides key information in a layered summary format and provides links to underlying studies or other source documents. At this time, users can find information organized in templates for the following:

Data Submitted to EPA

- Test rule and voluntary data for 178 chemicals
- TSCA §8(e) substantial risk notices for 2,400 chemicals, which include 600 submissions with fully templated data details
- TSCA §8(d) health and safety studies submitted under TSCA for 140 chemicals
- High Production Volume Information System voluntary submissions for 1,513 chemicals

EPA Assessments

- Hazard Characterizations for 1,018 chemicals
- Design for the Environment Alternatives Assessments for 48 Chemicals
- Integrated Risk Information System (IRIS) Assessments for 546 chemicals
- Design for the Environment List of Safer Chemical Ingredients for 659 chemicals
- USEPA Actions
- Significant New Use Rules for over 1,900 chemicals, representing actions on new chemicals and existing chemicals from 2000-present.
- Consent Orders for 245 chemicals. (Consent Orders represent the outcome of USEPA's review of a PMN for a new chemical substance where an order under TSCA §5(e) is issued
- A current list of all the chemicals subject to TSCA §12(b) export notification requirements is available, including the TSCA section 12(b) notification name, related regulatory CFR citation, and related TSCA Inventory name (if applicable). In addition, users will find a subset of over 2,800 chemicals which have additional information available in ChemView from across program offices.
- Manufacturing, Processing, Use, and Release Data
- Chemical Data Reporting for 7,235 chemicals is presented in a more user-friendly format for ChemView
- Toxics Release Inventory data for 609 chemicals
- Pollution Prevention (P2) information for 347 TRI chemicals

ACToR, Chemistry Dashboard and ToxCast Dashboard

ACToR incorporates chemical hazard information from a variety of sources, including US federal agencies such as the CDC, FDA, DOD, EPA, NIH, NOAA, OSHA, USDA, and USGS, as well as state level agencies such as the California EPA. It also includes datasets from ECHA, Environment and Health Canada, the Danish EPA, and the Australian Department of Sustainability, Environment, Water, Population, and Communities. Hazard information published by NGOs (e.g., EWG) and other similar groups is available as well. For a full listing of hazard data, [search the database](#) under the 'Hazard' Category.

Within the Chemistry Dashboard, users can access chemical structures, experimental and predicted physicochemical and toxicity data, and additional links to relevant websites and applications. It maps curated physicochemical property data associated with chemical substances to their corresponding chemical structures. Millions of predicted physical- chemical properties developed using machine-learning modeling of highly curated datasets are also mapped to chemicals. These data provide valuable information for analytical scientists involved in structure identification and can support targeted and non-targeted screening identification of environmental chemicals.

These data are compiled from sources including the USEPA's computational toxicology research databases, and public domain databases such as the National Center for Biotechnology Information's PubChem database. The database includes quality assurance flags that indicate the degree of curation and confidence associated with the data.

For each chemical, the ToxCast Dashboard summarizes chemical information.

- Chemical structure and data such as CAS#, simplified molecular input line entry system (SMILES), IUPAC International Chemical Identifier (InChI), chemical structures, chemical annotations, quality control information on the chemical tested, information on the chemical sample, and physicochemical properties.
- Chemical assay activity summaries and charts for the selected chemicals.
- Chemical Product Category (CPCAT) information listing product use category for the selected chemicals.

Exposure estimations based on manufacture and use information for the chemicals selected.

ToxCast users can select assays of interest using a number of filters. Assay filters include gene symbol, intended target, assay name, tissue, and 'actives' only. For each assay, the ToxCast Dashboard summarizes assay information.

- Assay data including assay descriptions, reagents used, citations from scientific papers that conducted an analysis of the assay data, and descriptions of methods used to process the assay data.
- Assay summary charts that show summaries of the assay activity for all the chemicals screened in the selected assay and a list of chemicals tested in the selected assay.

The biological activity function of selected chemical and assay pairs is summarized in the ToxCast Dashboard. Examples of summary information include hit calls, AC50 (chemical concentration producing 50% of the maximum activity in the assay), statistical model used to fit the activity data, and a plot of biological activity. If a user selects multiple chemical and assay pairs, the biological activity for each pair is added to the summary charts, which are downloadable and interactive.

IRIS

IRIS assessments provide the following toxicity values for health effects resulting from chronic exposure to chemicals.

- Reference Concentration (RfC): An estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a No Observable Adverse Exposure Level (NOAEL), Lowest Observable Adverse

Exposure Level (LOAEL), or benchmark concentration, with uncertainty factors generally applied to reflect limitations of the data used.

- Reference Dose (RfD): An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used.]
- Cancer descriptors characterize the chemical as:
 - Carcinogenic to Humans
 - Likely to Be Carcinogenic to Humans
 - Suggestive Evidence of Carcinogenic Potential
 - Inadequate Information to Assess Carcinogenic Potential
 - Not Likely to Be Carcinogenic to Humans
- Oral slope factor (OSF) is an estimate of the increased cancer risk from oral exposure to a dose of 1 mg/kg-day for a lifetime. The OSF can be multiplied by an estimate of lifetime exposure (in mg/kg-day) to estimate the lifetime cancer risk.
- Inhalation unit risk (IUR) is an estimate of the increased cancer risk from inhalation exposure to a concentration of 1 µg/m³ for a lifetime. The IUR can be multiplied by an estimate of lifetime exposure (in µg/m³) to estimate the lifetime cancer risk.

IRIS plays a critical role in USEPA risk assessments which are a four-step process described as "the characterization of the potential adverse health effects of human exposures to environmental hazards." Characterizing risk involves integrating information on hazard, dose-response, and exposure.

An IRIS assessment includes the first two steps of the risk assessment process:

- Hazard Identification, which identifies credible health hazards associated with exposure to a chemical, and
- Dose-Response Assessment, which characterizes the quantitative relationship between chemical exposure and each credible health hazard. These quantitative relationships are then used to derive toxicity values.

USEPA's program and regional offices identify human exposure pathways and estimate the amount of human exposure under different exposure scenarios (Exposure Assessment). Then they combine their exposure assessment with the hazard information and toxicity values from IRIS to characterize potential public health risks (Risk Characterization).

SRS

Hazard information is not available in the SRS. However, the SRS provides links, when known, from each SRS substance record to external sites and fact sheets. These external sites may be for USEPA programs, other U.S. agencies, or international organizations.

There is a record in the SRS for every substance that is tracked or regulated at USEPA. Each record provides basic information about that substance, such as the Chemical Abstract Service (CAS) number for a chemical or the TSN for a biological organism. Each record also identifies standardized nomenclature about the substance and any synonyms in use at USEPA. When available, there also are links to fact sheets or other documentation available from other web sites.

The SRS provides a range of services to users:

Search and retrieval of:

- Single substances
- Programmatic, statutory or other lists of substances
- Groups of substances
- Information about creating machine-to-machine integration between the SRS and other systems
- Outreach and education material to gain a better understanding of the SRS and its services
- Links to related regulatory information within USEPA and other federal agencies and states

The initial purpose of the SRS is, as the name implies, to register substances. The SRS is a registry or catalog of the substances that are identified by a federal environmental statute or that are tracked or regulated by any program at USEPA. The SRS does not contain the programmatic data for the substances; it simply identifies the substances; identifies the USEPA programs that track or regulate those substances; and identifies the names used for those substances by those programs.

B7.5. Quality of the Underlying EHS Information

ChemView

EPA must evaluate both hazard and exposure, exclude consideration of costs or other non-risk factors, use scientific information and approaches in a manner that is consistent with the requirements in TSCA for the best available science, and ensure decisions are based on the weight-of-scientific-evidence. All EPA evaluations undergo peer review and are subject to a minimum 60 day public comment period.

ACToR, Chemistry Dashboard and ToxCast Dashboard

The Computational Toxicology work being done by USEPA that underpins ACToR, Chemistry and ToxCast Dashboards is leading edge science. USEPA points to a long list of peer-reviewed journal publications that have been written about uses for the Dashboard.

Nevertheless, USEPA cautions that with respect to documents available from the ACToR server, neither the United States Government nor any of their employees, makes any warranty, express or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

ACToR itself is not peer reviewed; ACToR only contains publicly available datasets which have been previously published.

IRIS

The IRIS program has been continuously evolving since its inception. Numerous guidance and policy documents have been prepared over the years to ensure IRIS uses the best scientific approaches

available. These documents have undergone review by various USEPA Advisory Panels and have been subjected to public review and comment.

Draft IRIS assessments are released for public review and comment. USEPA announces the availability of the draft assessment and draft peer review charge questions for public review and comment on the IRIS website. A public meeting is held to discuss the draft assessment, draft peer review charge questions, and specific science questions raised by the assessment. The IRIS Program revises the draft assessment and peer review charge questions in response to the public's comments. Additionally, USEPA prepares a response to major public comments received during the public comment period.

Subsequently, the draft assessment and peer review charge questions are released for external peer review by the USEPA's Scientific Advisory Board (SAB) Chemical Assessment Advisory Committee (CAAC). During external peer review, a public external peer review meeting is held; the public is allowed to attend the peer reviewers' discussion of the draft assessment and provide comments. The SAB announces the dates and location of the peer review meeting.

For the last several years, numerous stakeholders, including industry, NGOs, state health officials, and others, have noted the importance of a strong and transparent assessment development process that produces high quality and timely products based on best available science to inform Agency decision-making. Mirroring this interest, the US Congress has also requested information and periodic updates on the IRIS Program's progress responding to recommendations, most notably from the National Academies (NAS) National Research Council. In the Consolidated Appropriations Act of 2017, as well as accompanying explanatory language, Congress requested actions related to the IRIS Program's implementation: of NAS recommendations, focused on:

- Peer review for the draft IRIS assessment of formaldehyde;
- Implementation of NAS recommendations in other IRIS assessments; and,
- a review of implementation of NAS recommendations by an interagency working group.

During the past several years, USEPA has been working to address the NAS recommendations as follows:

- Increase the transparency of assessments by fully implementing the principles of systematic review
- The IRIS Program has adapted or developed standardized approaches that foster consistency across the IRIS Program; enabling active and new assessments to meet all systematic review-related recommendations from the 2011 and 2014 NAS reports.
- Developing standard operating procedures (IRIS Handbook) and chemical assessment specific protocols that provide consistency across assessments.
- Modernize the IRIS Program. The IRIS Program is developing and using automation and machine-learning tools to expedite systematic review and incorporate emerging data types.
- Modularize product lines. IRIS implemented a portfolio of chemical evaluation products that optimize the application of the best available science and technology. These products will allow IRIS to remain flexible and responsive to customers within EPA as well as the diverse stakeholders beyond EPA, including states, tribal nations, and other federal agencies.
- Enhance accessibility

IRIS is providing outreach and training within and outside EPA to build familiarity and acceptance of systematic review practices.

In January of 2018, USEPA submitted an update on its actions to Congress. NAS just completed a two day workshop on 1-2 February 2018 to review advances made to the IRIS process and on March 18, 2018 EPA held another public meeting to hear comments.

SRS

Quality for SRS data is an on-going effort. With more than 100,000 records in SRS there are enormous opportunities for error. EPA focuses on quality in three areas for SRS:

- Quality of the information provided by SRS
- Assessment of the accuracy of the synonyms that are used by USEPA programs and which are thus published in SRS
- Value of the available information; e.g., links to related websites

Core information is the fundamental metadata about a substance. These data items remain static regardless of environmental statute or USEPA system. Examples of core metadata are the SRS Registry Name, the molecular weight, and the EPA Identifier.

The SRS Registry Name (a standard name USEPA adopts for each chemical and biological organism) requires high quality. To determine these names and to ensure their accuracy, there are workgroups with representatives from USEPA programs and state agencies that meet monthly. The workgroup participants include chemists, staff with extensive knowledge of laboratory analyses, plus other staff with long experience. This complement of diverse skills is necessary for making sound decisions.

Other core data intrinsic to the substance (e.g., molecular weight and molecular formula) are not generated by EPA but are maintained in SRS. To keep this information current and accurate, USEPA employs various processes for quality checking and updating of the information.

Future plans include evaluating the quality of the synonyms in the SRS. These synonyms, whether found in environmental statutes or in USEPA data systems, are not always correct. A name in an USEPA data system, submitted by a facility or other organization, may be misspelled. An environmental law may have used an ambiguous or inaccurate synonym. A review and quality assignment rating (e.g., valid, misspelled, ambiguous) of each synonym will help the users of SRS to decide whether or not to adopt a particular synonym.

Quality also means ensuring that the information in SRS is of value to users. Since one of the most widely used features of SRS is the fact sheets about substances, SRS will link to additional internal and external sources that provide fact sheets or other documentation about substances.

SRS will also either store other federal agencies' substance identification information or create links to their substance registries. The result will be the ability to go to SRS as a one-stop registry to discover substance information for the entire Federal government.

B7.6. Procedures for Updating the Database with New Information

ChemView

EPA updates its assessments whenever they become aware of significant new substantial risk information, which includes new scientific information that impact the hazard assessment or significant new use/exposure information.

ACToR, Chemistry Dashboard and ToxCast Dashboard

These databases are maintained by the National Center for Computational Toxicology.

IRIS

The IRIS program maintains the integrity of the chemical assessments by following the 2009 IRIS process prior to posting updated or new assessments to the IRIS Web site and database. These are announced on the IRIS Agenda and then can be tracked as they follow the IRIS Process for development through IRISTrack. The final assessments are then posted throughout the year. The IRIS Program is managed by USEPA's NCEA.

SRS

The USEPA maintains the database. Maintaining the substance lists in SRS is another area that demands quality assurance. Discovering which substances are named in a particular statute or which substances are tracked by a certain EPA database is a principal use of SRS. EPA has determined that the best approach to managing the substance lists is through stewardship. Each substance list has at least one steward who manages a specific list within SRS. Normally, the steward is from the organization that is responsible for, or has the best information about, the substance list.

B8. U.S. Agency for Toxic Substances & Disease Registry (ATSDR) Toxic Substances Portal

The information presented below represents a summary of key information about the EHS information on industrial chemicals that is available from ATSDR, an agency of the US government that protects communities from harmful health effects related to exposure to natural and man-made hazardous substances. ATSDR maintains a Toxic Substances Portal which includes important information about toxic substances and how they affect human health. [More detailed information is available about ATSDR from their website.](#)

B8.1. Overview/Description

ATSDR, based in Atlanta, Georgia, is an agency of the U.S. Department of Health and Human Services. ATSDR protects communities from harmful health effects related to exposure to natural and man-made hazardous substances. They do this by responding to environmental health emergencies; investigating emerging environmental health threats; conducting research on the health impacts of hazardous waste sites; and building capabilities of and providing actionable guidance to state and local health partners.

In response to widespread environmental contamination at Love Canal, New York and Times Beach, Missouri, Congress passed the Comprehensive Environmental Response, Compensation, and Liabilities Act (CERCLA or "Superfund" law) in 1980. This law created ATSDR, which was formally organized in 1985. Superfund and the Superfund Amendments and Reauthorization Act of 1986 (SARA) gave the U.S. Environmental Protection Agency (EPA) the responsibility for identifying, investigating, and cleaning up

contaminated sites on the National Priorities List and created ATSDR as a non-regulatory public health agency to

- Conduct health assessments,
- Conduct health consultations,
- Produce toxicological profiles,
- Conduct epidemiological studies, and
- Establish registries and conduct health surveillance.

At first, ATSDR focused on evaluating toxic exposure just for communities near Superfund sites. As time went on, the agency began to assess requests from EPA; state, tribal or local agencies; residents; and communities. In total, ATSDR has addressed health concerns about chemical exposure in more than 6,000 communities.

Most of ATSDR's work in communities focuses on understanding whether people are or have been exposed to harmful chemicals. ATSDR does not respond to all requests. Once a request is received, they review existing environmental and health information to find out if people are at risk because of their exposures. And when appropriate, ATSDR makes recommendations to EPA; state, regulatory and health agencies; and other organizations for preventing the harmful exposures.

Sometimes ATSDR assessments identify important missing information that keep them from answering questions about health risks, so they conduct or recommend further investigation.

They evaluate environmental health issues that differ widely in scope, size, and exposure type, including

- Large projects with many steps and reviews, such as public health assessments
- Long-term studies of possible environmental health effects in a larger population, such as our investigations of asbestos exposure in Libby, Montana, and ongoing investigations of exposure to contaminated drinking water at Camp Lejeune, North Carolina.
- Studies of connections between exposures and health, such as our study of exposure to uranium and other metals and pregnancy outcomes in the Navajo Nation.
- Much smaller projects, like helping to determine whether one or two families with private wells can safely drink their well water.

ATSDR works closely with local residents, setting them apart from many other federal agencies. At exposure sites, they

- Talk to individual community members to find out how environmental exposures affect them.
- Establish community assistance panels to help guide our work when they conduct more detailed investigations.
- Hold public meetings to explain their findings and recommendations.
- Work with health providers near exposure sites to help them answer patients' questions and provide effective treatment.

Although much of ATSDR's work focuses on assessing community exposures, their toxicologists, medical officers, and other scientists also respond to environmental emergencies, like the oil pipeline breach near the Yellowstone River in Montana.

ATSDR's Assessment of Chemical Exposures (ACE) program provides resources and technical help to rapidly assess health effects from toxic spills or releases. ACE can quickly assemble a team of experts to help state and local health departments either from Atlanta or at the scene.

ATSDR is known world-wide for its research and contributions to scientific and technical knowledge, including the latest information about toxicology, environmental science, and environmental medicine.

ATSDR maintains a Toxic Substances Portal which includes important information about toxic substances and how they affect human health.

- ATSDR toxicological profiles (ToxProfiles™) are used by scientists, health providers, and regulators around the world.
- Also available in the portal are short summaries of the profiles (ToxFAQs™) that answer major questions about the health risks of hazardous substances.

In addition, ATSDR offers support for healthcare providers nationwide to diagnose and treat environmentally linked health concerns, including

- Pediatric Environmental Health Specialty Units (PEHSUs) for clinical consultations to physicians;
- Case Studies in Environmental Medicine online, plus continuing education courses for diagnosing and treating environmental exposures; and
- Medical Management Guidelines to help emergency departments and health providers manage acute exposures from chemical incidents, plus comprehensive evaluation and treatment guidelines.
- Other technical resources include geospatial analyses to identify contamination and estimate how many people are exposed; computational toxicology; exposure modeling, and biomonitoring.

ATSDR's partnership with the National Center for Environmental Health (NCEH) allows the agency to use Centers for Disease Control (CDC) resources to protect communities. ATSDR often relies on NCEH's state-of-the-art environmental laboratory to evaluate biological samples, such as children's blood for lead and other metals.

NCEH/ATSDR confronts environmental health challenges and addresses the risks Americans face from chemicals in their environment. Their work advances the science of environmental health and translates that science into practice by developing tools, conducting research, and partnering with local health departments, officials, and practitioners.

ATSDR is directed by congressional mandate to perform specific functions concerning the effect on public health of hazardous substances in the environment. These functions include public health assessments of waste sites, health consultations concerning specific hazardous substances, health surveillance and registries, response to emergency releases of hazardous substances, applied research in support of public health assessments, information development and dissemination, and education and training concerning hazardous substances.

A significant goal is to reduce morbidity and mortality related to exposure to natural and man-made toxic substances. Partnerships between ATSDR and with others in the CDC and with states, territories, localities, tribes, academic institutions, and other organizations are essential to achieving its mission and goals.

ATSDR's Toxic Substances Portal provides access to a number and variety of resources for Toxic Substances as described below. Those resources which directly provide EHS information on chemical substances have been bolded and are the focus of the remainder of this chapter.

Case Study in Environmental Medicine (CSEM) — Self-instructional publication designed to increase primary care provider's knowledge of a hazardous substance in the environment and to aid in the evaluation of potentially exposed patients.

Community Environmental Health Presentations (CEHPs) — CEHPs include information about specific types of exposures to hazardous substances, exposure routes and pathways, health effects, and how to prevent and minimize exposures.

Grand Rounds in Environmental Medicine (GREM) — are 1-hour seminars designed to increase the primary care provider's knowledge of hazardous substances in the environment and to aid in the evaluation of potentially exposed patients. The GREM seminars are available and downloadable online in two versions. The first version is scripted PowerPoint presentations ready for medical educators to use in face-to-face sessions with primary health-care providers, medical students, and others. The second version is a video recorded presentation that can be viewed online by individuals or groups. Both versions offer approved continuing education credits.

Interaction Profiles — Succinctly characterizes the toxicologic and adverse health effects information for mixtures of hazardous substances.

Managing Hazardous Materials Incidents (MHMIs) The MHMI series is a three volume set (with a video) comprised of recommendations for on-scene (pre-hospital), and hospital medical management of patients exposed during a hazardous materials incident.

Medical Management Guidelines (MMG) for Acute Chemical Exposure — This publication is intended to aid emergency department physicians and other emergency healthcare professionals who manage acute exposures.

Minimal Risk Levels (MRL) which are estimates of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse, non-cancer health effects over a specified duration of exposure. The information in this MRL serves as a screening tool to help public health professionals decide where to look more closely to evaluate possible risk of adverse health effects from human exposure.

Mixtures Guidance Manual — Provides guidance for assessment of joint toxicity of environmental chemicals to determine whether exposure to chemical mixtures may impact public health.

Patient Education and Care Instruction Sheet — Complement the newly developed or revised CSEM and GREM topics. These job aids provide general information on various environmental medicine topics and give health-care providers quick, ready-to-use materials to aid in patient care and instruction. Patient Education and Care Instruction Sheets are available and downloadable online. These education sheets are made available for use with patients and do not offer continuing education credit for their use.

Pediatric Environmental Health Training— provides in-depth information The Pediatric Environmental Health Toolkit (PEHT) offers health-care providers detailed examples about how to best deliver anticipatory guidance on a range of environmental health issues, especially during regularly scheduled healthy child examinations.

Priority Data Needs — represent essential information to improve the database for conducting public health assessments.

Priority List of Hazardous Substances — based on a combination of their frequency, toxicity, and potential for human exposure at National Priorities List (NPL) sites.

Public Health Statement — Summary about a hazardous substance taken from Chapter One of its respective ATSDR Toxicological Profile.

ToxFAQs — The ATSDR ToxFAQs are summaries about hazardous substances developed by the ATSDR Division of Toxicology and Human Health Sciences. Information for this series is excerpted from the ATSDR Toxicological Profiles and Public Health Statements. Answers are provided to the most frequently asked questions (FAQs) about exposure to hazardous substances found around hazardous waste sites and the effects of exposure on human health.

ToxGuide — Quick reference guide providing information such as chemical and physical properties, sources of exposure, routes of exposure, minimal risk levels, children's health, and health effects for a substance.

Toxicological Profile¹ — Succinctly characterizes the toxicologic and adverse health effects information for a hazardous substance.

Addendum to the Profile — provides to the public and other federal, state, and local agencies a non-peer reviewed supplement of the scientific data that were published in the open peer-reviewed literature since the release of the Toxicological Profile.

Toxicology Curriculum for Communities Trainer's Manual — provides four training modules for lectures or seminars for communities, on the topic of toxicology and issues surrounding environmental exposures.

ToxZine — Summary of health effects, exposure, and recommendations in an easy-to-read magazine format.

¹ By Congressional mandate, ATSDR produces "toxicological profiles" for hazardous substances found at National Priorities List (NPL) sites. These hazardous substances are ranked based on frequency of occurrence at NPL sites, toxicity, and potential for human exposure. Toxicological profiles are developed from a priority list of 275 substances. ATSDR also prepares toxicological profiles for the Department of Defense (DOD) and the Department of Energy (DOE) on substances related to federal sites.

B8.2. Scope of Chemicals Addressed

Federal law (CERCLA) requires ATSDR and the EPA to prepare a list, in order of priority, of substances that are most commonly found at facilities on the NPL and which are determined to pose the most significant potential threat to human health due to their known or suspected toxicity and potential for human exposure at these NPL sites. CERCLA also requires this list to be revised periodically to reflect additional information on hazardous substances. In CERCLA, it is called the priority list of hazardous substances that will be candidates for toxicological profiles.

This substance priority list is revised and published on a 2-year basis, with a yearly informal review and revision. (No list was published in 2009 while ATSDR transitioned to a new agency science database.) Each substance on the list is a candidate to become the subject of a toxicological profile prepared by ATSDR. It should be noted that this priority list is not a list of “most toxic” substances, but rather a prioritization of substances based on a combination of their frequency, toxicity, and potential for human exposure at NPL sites. Thus, it is possible for substances with low toxicity but high NPL frequency of occurrence and exposure to be on this priority list. The objective of this priority list is to rank substances across all NPL hazardous waste sites to provide guidance in selecting which substances will be the subject of toxicological profiles prepared by ATSDR.

ATSDR’s mission extends to all chemical substances, man-made and natural, that may pose risks to humans community settings. This includes industrial chemicals in commerce, but also to pesticides, biocides, and chemicals that are no longer in commerce and others that have never been produced, imported or sold commercially (e.g., chlorinated dioxins and furans, polycyclic aromatic hydrocarbons and other substances).

B8.3. Ease of Access and Use of Chemical Information

ATSDR’s Toxic Substances Portal is easily accessed.

The Portal may be searched for substances by:

- Alphabetical Listing (A-Z)
- CAS#
- Substance Name
- Synonym
- Tradename
- Individual States where they have been found in communities

Alternatively, the Portal may be searched for toxicological information by:

- Effects on Organ Systems and their Development
- Cancer Classification
- Structures, Properties or Use (14 separate categories)
- Audience (i.e., community members, emergency responders, toxicological and health professionals, and health care providers)

Although no user guide to assist in conducting searches could be located, the search process is intuitive using point and click on text descriptors supplemented with icons.

B8.4. Breadth and Depth of EHS Information Available

The ATSDR toxicological profile succinctly characterizes the toxicologic and adverse health effects information for the hazardous substances included in the ATSDR database. Each peer-reviewed profile identifies and reviews the key literature that describes a hazardous substance’s toxicologic properties. Other pertinent literature is also presented, but is described in less detail than the key studies.

The focus of the profile is on health and toxicologic information. Therefore, each profile begins with a Public Health Statement that summarizes in nontechnical language, a substance's relevant properties.

A useful two-page information sheet, the ToxFAQs is also available, as are ToxGuides™ which are quick reference guides providing information such as chemical and physical properties, sources of exposure, routes of exposure, minimal risk levels, children's health, and health effects. The ToxGuides™ also discuss how the substance might interact in the environment. Furthermore, a summary of health effects, exposure, and recommendations in an easy-to-read magazine format ToxZine are available for a dozen or so chemical substances.

Each ATSDR Toxicological Profile has the following chapters:

- Preface
- Public Health Statement
- Relevance to Public Health
- Health Effects
- Chemical and Physical Information
- Production, Import, Use, and Disposal
- Potential for Human Exposure
- Analytical Methods
- Regulations and Advisories
- References
- Glossary
- Appendices
- References
- Disclaimer
- Where can I get more information?

As of February 20, 2018, ATSDR has prepared and published Toxicological Profiles for nearly 200 substances or chemical families (e.g., polycyclic aromatic hydrocarbons) and has profiles under development for approximately 30 more substances.

B8.5. Quality of Underlying EHS Information

Toxicological profiles are developed in two stages:

DRAFTS: The toxicological profiles are first produced as drafts. ATSDR announces in the Federal Register the release of these draft profiles for a 90-day public comment period.

FINALS: After the 90-day comment period, ATSDR considers incorporating all comments into the documents. ATSDR finalizes the profiles. ATSDR has published detailed guidance for preparing toxicology profiles.

ATSDR has adopted the National Research Council's (NRC's) "Guidelines for Assessing the Quality of Individual Studies," which appear in TOXICITY TESTING: Strategies to Determine Needs and Priorities, published by NRC in 1984. ATSDR agrees with the NRC that judging the quality of past and future studies solely by today's standards is inappropriate. The NRC considers a report of scientific findings adequate for use in health hazard assessment if the report meets the following basic criteria:

- All elements of exposure are clearly described.

- Results in test subjects are predictive of human response, and test subjects are sensitive to the effects of the substance.
- Controls are comparable with test subjects in all respects except the treatment variable.
- End points answer the specific questions addressed in the study, and observed effects are sufficient in number or degree to establish a dose-response relationship that can be used in estimating the hazard to the target species.
- Both the design and the interpretation of the study allow for appropriate statistical analysis of the data.

Where appropriate, these criteria should be applied to judgments on the quality of data from epidemiological investigations and other scientific studies of relevance to ATSDR's toxicological profiles. The reliability of epidemiological data in hazard identification is increased when results are obtained from studies that have the following characteristics:

- Are derived from well-designed and well-executed case control or cohort studies that are free from bias.
- Display a strong association unlikely to be due to chance variation.
- Follow a logical, temporal sequence of exposure-response.
- Have been replicated in a variety of settings.
- Exhibit a dose-response relationship, using valid estimates of exposure and dose.
- Are toxicologically plausible.
- Where possible, include an examination of causality.

In addition, ATSDR recognizes the following desirable factors of studies or reports of scientific findings as set forth in the NRC guidelines:

- Subjective elements should be minimized.
- Peer review of scientific papers and of reports is desirable. Note: CERCLA mandates the peer review of toxicologic testing results that ATSDR uses.
- Results reported have increased credibility if they are supported by findings from other investigations.
- Similarity of results to those of tests conducted on structurally related compounds increases scientific confidence.
- Evidence of adherence to good laboratory practices improves confidence in results.

B8.6. Procedures for Updating the Database with New Information

The purpose of Toxicological Profiles Addenda is to provide, to the public and other federal, state, and local agencies a non-peer reviewed supplement of the scientific data that were published in the open peer-reviewed literature since the release of the profile.

ATSDR encourages users of their Toxicology Profiles that, if they are aware of new or additional studies that will contribute to the database to send them to:

Agency for Toxic Substances and Disease Registry

Division of Toxicology and Human Health Sciences

1600 Clifton Road NE, Mailstop F-57

Atlanta, GA 30333

FAX 770 488-4178

additionalreference@cdc.gov

B9. California Department of Toxic Substances Control Chemical Information Tool and Toxics Information Clearinghouse

The information presented below represents a summary of key information about the EHS information on industrial chemicals that is available from the State of California's Department of Toxic Substances Control (DTSC), which is a part of California Environmental Protection Agency (CalEPA). DTSC maintains a Chemical Information Tool and a Toxics Information Clearinghouse, both of which provide access to EHS information about chemicals in commerce. More detailed information about DTSC is available from their website.

B9.1. Overview/Description

The mission of DTSC is to protect California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. DTSC takes enforcement action against violators; oversees cleanup of hazardous wastes on contaminated properties; makes decisions on permit applications from companies that want to store, treat or dispose of hazardous waste; and protects consumers against toxic ingredients in everyday products. The department is committed to engaging the public in a way that gives those most affected by its decisions opportunities to voice their concerns and ask questions.

Among DTSC's responsibilities is implementation of California's Safer Consumer Products (SCP) law. The California legislature passed the Green Chemistry Law in 2008 to implement two key recommendations of the California Green Chemistry Initiative Final Report:

- Accelerate the search for safer products
- Create an online toxics clearinghouse

The regulations and authorizing statutes implement recommendation #5 of the California Green Chemistry Initiative Final Report—Accelerate the Quest for Safer Products. They also create a systematic, science-based process to evaluate Chemicals of Concern (COC), and identify safer alternatives. The law authorizes and requires DTSC to adopt regulations to identify and prioritize chemicals in consumer products.

The DTSC's SCP regulations took effect October 1, 2013 and are being implemented based on the various regulatory requirements.

The goals of this program are to:

- Reduce toxic chemicals in consumer products
- Create new business opportunities in the emerging safer consumer products industry
- Help consumers and businesses identify what is in the products they buy for their families and customers

To accomplish these goals, the SCP Program relies on reports submitted by responsible entities, such as manufacturers. DTSC hopes the information in these reports will increase the use of safer chemicals in

products used in homes, schools, and workplaces, and result in significant environmental and economic benefits.

DTSC followed through by developing a process for evaluating COC in consumer products and their possible alternatives. The initial set of "priority products" was released in the Spring of 2014 and in September of that year DTSC released a draft three-year work plan that identifies product categories that will be the focus of future priority products.

The regulations provide for a continuous four-step, science-based, ongoing process to identify safer consumer product alternatives. The process includes:

1. Immediate identification of a list of Candidate Chemicals (about 1,100 chemicals) based on the work of authoritative organizations, and specify a DTSC process to add to the list over time. Candidate chemicals have at least one quality that can cause harm to human health or the environment referred to as a hazard trait. The Candidate list may be found on the DTSC website.
2. Identification of Priority Products which are products that contain one or more Candidate Chemicals. A Candidate Chemical found in a Priority Product is called a COC. Before a Priority Product is finalized it must go through a rule-making process that can take up to a year. Sixty days after a Priority Product is finalized, responsible entities (e.g., manufacturers) must submit Priority Product Notifications.
3. Priority Product responsible entities must then perform Alternatives Analysis on any and all COCs in their products to determine how to limit exposure or reduce the level of public health and/or environmental harm.
4. DTSC must identify regulatory responses that will protect public health and/or the environment and maximize the use of acceptable and feasible alternatives of least concern. DTSC may require regulatory responses if the manufacturer decides to retain the COC in their product, or for an alternative product selected to replace it.
5. Alternatives Analysis is a process for comparing an existing Priority Product with potential alternatives such as chemical substitution or product redesign. The process uses factors which are evaluated at each stage of the product's life cycle. When the Alternatives Analysis is complete, the manufacturer or another responsible entity will select an alternative chemical ingredient or alternative product design or decide to retain the existing product-chemical combination.

Each responsible entity is required to submit a report on the completed Alternatives Analysis to DTSC. DTSC will evaluate the report to determine if the chosen alternative creates adverse public health or environmental impacts that need to be remedied by a regulatory response.

DTSC has developed the Chemical Information Tool (CIT) and the Toxics Information Clearinghouse to assist responsible entities with their Alternatives Assessments.

B9.2. Scope of Chemicals Addressed

One area of ambiguity and concern is the regulations' definition of consumer products. The SCP embraces the definition of consumer product specified in section 25251 of the state Health and Safety Code, which says it is a "product or part of the product that is used, brought, or leased for use by a person for any purposes." The regulations also define consumer products to include "a component of an assembled" product. Products exempt from SCP include: drugs, medical devices, dental restoratives, food and pesticides.

The Candidate Chemicals identified in the SCP Regulations were developed using 23 authoritative lists, which fall into one of two categories: lists based on hazard traits (15 lists), and lists based on potential exposure concerns (8 lists).

A Candidate Chemical must appear on one or more of these lists and must exhibit a hazard trait and/or environmental or toxicological endpoint.

As of this writing, the list contains ~1,100 grouped Candidate Chemicals, which includes group names and Candidate Chemicals that are not in a group. There are ~2,300 Candidate Chemicals if all individual chemicals (regardless of the group association) are counted.

B9.3. Ease of Access and Use of Chemical Information

The Candidate Chemical List may be searched by:

- CAS# and Chemical Name,
- Group Name,
- COC,
- hazard traits,
- authoritative lists, or
- potentially excluded Candidate Chemicals.

Alternatively, users may download the entire list for exporting to an Excel file for viewing or printing.

The Chemical Information Tool (CIT) is an online system with information on chemicals, including hazard traits and toxicological endpoints. It is a search engine accessing chemical toxicity information available on the Web from 56 separate third party information sources.

The CIT allows users to search and find information about chemicals and associated hazard traits, if known. Submit a search for a chemical or its hazard traits, and the user will receive links to relevant websites of governmental organizations, peer reviewed articles, university publications, industry sources, and non-governmental organizations.

Accordingly, a user can search the following hazard trait categories:

1. Toxicological Hazard Traits—Carcinogenicity, Developmental Toxicity, and Reproductive Toxicity;
2. Other Toxicological Hazard Traits;
3. Environmental Hazard Traits;
4. Exposure Potential Hazard Traits; and,
5. Physical Hazard Traits.

The CIT includes:

- A Search function by chemical name or CAS#
- Search results shown as links to information in publicly available data collections.

The links are displayed by:

- Hazard traits, toxicological endpoints or physical-chemical parameters; or,
- Authoritative organizations (governmental entities only).

DTSC has published some guidance to assist with searches of CIT.

DTSC notes that a high number of search results does not necessarily mean that a chemical is more toxic. The search results reflect the information found in the data collections that were searched. The results may not be unique and do not represent the completeness or quality of analytical test results. A single “result,” or synthesis of results, may be repeated in many data collections.

The intent of DTSC’s Toxics Information Clearinghouse (TIC) is to provide a diverse and wide-ranging collection of chemical information sources including specific chemical hazard traits and environmental and toxicological end-point data.

TIC shares many characteristics of OECD’s eChemical Portal and IPSC’s INCHEM Portal in that it provides links to databases that are owned and maintained by third parties. Many of those databases have been reviewed in other chapters of this report.

The TIC can be searched by Information Type or by Sources of Information.

Information Type

- Chemical and physical properties
- Source information, fate and exposure
- Toxicology, epidemiology and hazard
- Eco-toxicology, ecology and resource damage
- Laws, regulations, policies, lists, approaches, tools

Sources of Information

- Governments
- Private Sector
- Academic
- NGOs

A search of TIC yields a list of third-party information sources and links to their websites which must then be searched individually to locate EHS chemical information.

B9.4. Breadth and Depth of EHS Information Available

The breadth and depth of EHS information available from searches of CIT and TIC varies considerably based on the contributing data source and substance being queried. Hazard traits, toxicological endpoints and physical-chemical parameters are not available for every chemical. The CIT does not

store electronic copies of journals, articles, or documents locally. The search results are displayed by the most recent date of publication as a default.

B9.5. Quality of the Underlying EHS Information

The quality of EHS information that is available from searches of CIT and TIC varies considerably based on the contributing data source and substance being queried. DTSC makes no warranty or representation, express or implied, regarding the completeness, reliability and/or accuracy of the information provided in the CIT website. Any action taken based on the information in the database is at the user's own risk. DTSC will not be liable for any losses or damages in connection with the use of the database.

DTSC's inclusion of a link within either CIT or TIC is not an endorsement of the claims, contents or the provider of the information within the linked site. Nor does DTSC assume any responsibility for any claims or losses arising out of reliance on the information within the linked site or the provider. DTSC has not undertaken an independent review of the accuracy of the information within the linked sites or any of the provider's representations and claims.

CIT and TIC dynamically search accessible data collections created and maintained by authoritative organizations, which are state, national, and international governmental entities.

Authoritative organizations have set standards and methods for scientifically valid studies and information. These entities use such information in making determinations about risks or hazards for chemical substances and in regulating threats to public health or the environment posed by chemical substances.

B9.6. Procedures for Updating the Database with New Information

Different data sources linked to CIT and/or TIC use different methods to maintain and provide updates of their data with new information.

The methods vary from an automatic update via the Internet, semi-automatic update via the Internet, to a manual import of data files, depending on participating data source resources and the frequency of updates. Users are urged to consult with the individual participating data sources if they need to be assured that they have the most up-to-date information on a substance.

DTSC may change or update the information in CIT or TIC without notice. Users are encouraged to contact DTSC should they have additional EHS information to share about a specific chemical.

B10. Environmental Working Group's (EWG) Skin-Deep™ Database

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from EWG's Skin-Deep Database. For more detailed information on Skin-Deep, the reader should consult directly with the [EWG website](#).

B10.1. Overview/Description

EWG describes itself as a non-profit, non-partisan organization dedicated to protecting human health and the environment. Their self-described mission is to empower people to live healthier lives in a healthier environment. With breakthrough research and education, they aim to drive consumer choice and civic action.

Through their reports, online databases, mobile apps and communications campaigns, EWG is educating and empowering consumers to make safer and more informed decisions about the products they buy and the companies they support. In response to consumer pressure, companies are giving up potentially dangerous chemical ingredients in their products and improving their practices.

EWG's Skin-Deep database gives consumers practical solutions to protect themselves and their families from everyday exposures to chemicals. EWG launched Skin-Deep in 2004 to create online profiles for cosmetics and personal care products and their potential hazards and health concerns. Their aim is to fill in where industry and government leave off.

EWG staff scientists compare the ingredients on personal care product labels and websites to information in nearly 60 toxicity and regulatory databases. Now in its eighth year, EWG's Skin-Deep database provides consumers with easy-to-navigate ratings for a wide range of products and ingredients on the market. Since the focus of the current report is on EHS information sources, the EWG product ratings are not described or discussed further.

The core of Skin-Deep is an electronic product database that contains ingredients in 74,032 products. EWG obtained detailed information on these products from online retailers, manufacturers, product packaging, and, to a lesser extent, through other methods described below. In most cases the information EWG obtains includes a brand name, product name, directions for use, warnings, ingredients, package/advertising text, and indications (cosmeceuticals).

Every product added to Skin-Deep is carefully reviewed by EWG staff to identify product type, product use and composition, target demographic, and special product claims.

Product type: EWG categorizes each product into one or more of 130 product categories (e.g., shampoo, toothpaste, deodorant). For ease of navigation, these product categories are organized into ten major product categories - sun protection, makeup, skin care, hair, eye care, nails, fragrance, babies & moms, oral care, and mens.

Product use/composition: EWG records information on how each product is typically used. Many hazards or safety recommendations associated with chemicals depend on a product's use and/or composition. For instance, chemicals that are hazardous when they are inhaled would be a concern for products that are sprayed or that are in powder form. For each product EWG records:

- Body areas exposed: skin, face, lips, around the eyes, hair or scalp, in the mouth, on damaged or cracked skin, on nails or cuticles, or on areas for feminine hygiene.
- Type of exposure: product left on after application, rinsed off, or wiped off.
- Form of the product: solid, cream, liquid, gel, mousse, packed powder, loose powder, spray, aerosol.

Target demographic: EWG compiles demographic information on the product's intended users, recording if the product is intended primarily for women or men, or if the product is marketed for use by people of color, teenagers, children (2 to 12), or infants (0 to 2). The demographic data are used to score ingredients with demographic restrictions (especially those which should be avoided by infants) and in specialized displays of product information.

Special product claims: For some product types EWG compiles information about claims made by manufacturers. For example, with each sunscreen product we store SPF claims, water resistance, and other sun protection claims.

Brand and company information: Skin-Deep currently holds products sold under 2,143 brand names and manufactured by 1,608 companies. Skin-Deep contains a brand and company database created by EWG researchers, built primarily through online research into each brand contained in Skin-Deep.

Because animal testing is an issue of concern for many consumers, EWG also incorporates into Skin-Deep information on company and brand stances on animal testing. Information on company positions on animal testing is obtained from People for the Ethical Treatment of Animals' (PETA) and Leaping Bunny's listings. EWG periodically updates their Skin-Deep database to reflect the most current PETA and Leaping Bunny listings.

Skin-Deep currently contains information on 8,983 personal care product ingredients, culled from ingredient labels on products and from the scientific and industry literature on personal care products. EWG assign a standardized name to each ingredient in the Skin-Deep database, generally taken as the International Nomenclature for Cosmetic Ingredients (INCI) standard, with some exceptions where alternate names are more easily recognized by consumers. Each of these ingredient names is associated with a unique ingredient identification number in their database. The processing steps for ingredients are described below.

Skin-Deep's ingredient database is constructed from the sources listed below:

- Product ingredient listings. EWG researchers have parsed ingredient lists from products contained in the Skin-Deep product database to construct a database of all unique ingredients listed on the product labels. They have reviewed each ingredient, corrected misspellings in ingredient names, and combined ingredients that are synonyms into a single unique chemical that is assigned a unique chemical identification number in Skin-Deep. The database currently contains 152,566 unique chemicals. This means that each ingredient is shown an average of 23 different ways (various spellings and synonyms) on the labels of the various products containing it.
- Industry ingredient listings. The International Cosmetics Ingredient Dictionary and Handbook (Tenth Edition, 2004, published by the Cosmetic, Toiletry, and Fragrance Association, Inc.) contains "name monographs" for 491 ingredients listed under their INCI designations. EWG researchers include these ingredients in the Skin-Deep ingredient database.
- Industry-reviewed ingredients. The personal care product industry's (Personal Care Product Council's) internal safety panel, the Cosmetic Ingredient Review, had assessed the safety of ingredients as of their latest compendium publication (Cosmetic Ingredient Review (CIR), 2009 CIR Compendium, Washington, DC). EWG researchers entered each of these ingredients (and accompanying safety findings made by the panel) into Skin-Deep's ingredient database.

- Ingredients from toxicity, regulatory, and study availability databases. EWG imported additional ingredients into the database from the nearly 60 data sources they have compiled on the toxicity, regulatory status and study availability of chemicals in personal care products. These sources are listed below under a section titled "Data Sources."
- Manufacturer-entered ingredients. Skin-Deep contains information on ingredients in products entered into the site by manufacturers via data entry tools EWG makes available to companies that have signed the Compact for Safe Cosmetics via the Campaign for Safe Cosmetics. Most of these ingredients are also found in other ingredient sources listed above; some are unique, found in none of our other data sources.

Additional data stored with a product's ingredient list: In the Skin-Deep ingredient database EWG also stores information how each ingredient is used in each product - for instance, its status as an "active ingredient" in the product; its listing under "may contain," or "organic" under USDA standards; or its association with modifiers that indicate manufacturing methods, like USP for United States Pharmacopeia standards or NF for National Formulary standards.

EWG created a core, integrated database of chemical hazards, regulatory status, and study availability by pooling the data of nearly 60 third party databases and sources from government agencies, industry panels, academic institutions, or other credible bodies. Collectively, these data sources detail more than 1,535 unique chemical classifications. EWG uses these databases to assess potential health hazards and data gaps for cosmetic ingredients.

EWG cross-linked the chemicals in their ingredient database with the compounds contained in the toxicity, regulatory, and study availability databases they compiled. These pairs form the basis for the hazard assessment ratings and data availability ratings shown in Skin-Deep.

B10.2. Scope of Chemicals Addressed

The focus of Skin-Deep is on chemical ingredients found in 74,032 cosmetics and personal care products in the U.S. divided into some 130 product categories (e.g., shampoo, toothpaste, deodorant, etc.).

B10.3. Ease of Access and Use of Chemical Information

EWG provides a user's guide to assist in searching its Skin-Deep database. In brief, the database can be searched by:

- Product name
- Ingredient
- Name of Company Marketing the Product
- Product Category

B10.4. Breadth and Depth of EHS Information Available

A search of Skin-Deep by ingredient name yields the following EHS information (if available) mostly described in layperson's language:

- Chemical structure

- Chemical/Physical Properties
- Function/Uses
- Synonyms
- Rating (Low, Moderate or High) of Health Concerns:
- Overall Hazard
- Cancer
- Developmental and Reproductive Toxicity
- Allergies and Immunotoxicity
- Use Restrictions
- Data Gaps
- Eco-toxicity
- Multiple Additive Exposure Sources
- Organ System Toxicity (excluding Reproductive Toxicity)
- Persistence and Bioaccumulation
- References
- Data Sources

Absent is any discussion of safe levels of exposure, typical exposure levels encountered during normal use or of risk assessments that may have been conducted by any parties.

B10.5. Quality of the Underlying EHS Information

EWG employs experts in toxicology and environmental sciences. Working together they created a core, integrated database of chemical hazards, regulatory status, and study availability by pooling the data of nearly 60 third party databases and sources from government agencies, industry panels, academic institutions, or other credible bodies.

EWG assigned numeric hazard scores for each scoring category based on professional judgment of the relative importance of each with respect to potential health concerns. These scores were informed by a number of factors, including the weight of the evidence associated with each scoring category (e.g. whether the chemical categorization is derived from a full government assessment or from a single peer-reviewed study), and by other hazard classification systems, such as the Nordic Substances Database.

For most types of hazards, EWG assigns scores as a function of the lowest known harmful dose where that information is available, the weight of the evidence (limited, moderate, and strong evidence), and the source of the data (individual study; literature review, industry review panel, or major government study; and comprehensive government assessment).

B10.6. Procedures for Updating the Database with New Information

EWG notes that its Skin-Deep database (including all of its web-based materials and applications) is dynamic, and that product ratings on any of these properties may change based on evolving science, new information, or other factors. The product ratings, images, conclusions, recommendations, and findings that appear in Skin-Deep reflect EWG's research at the time of publication. They advise that this information frequently relies on data obtained from many sources, and accordingly, EWG cannot guarantee the accuracy of the information provided or any analysis based thereon. Moreover, in light of

evolving regulatory and market conditions, subsequent product reformulations, and other factors, this information may no longer be current. EWG makes no representations or warranties about Skin-Deep.

In order for Skin-Deep users to easily find the most current products on the market, EWG will mark any products that have been in the database for longer than 3 years as "old formulation." Products that have not been verified in the last 6 years will be removed from the database. This will ensure that the most up-to-date products show up first on when consumers search the database.

No commitment by EWG to regularly update the EHS information on ingredients could be located on its website.

B11. ChemSec Substitute it Now! (SIN) List

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the [ChemSec SIN List](#). For more detailed information, the reader should consult directly with the [ChemSec website](#).

B11.1. Overview/Description

ChemSec – the International Chemical Secretariat – is an independent non-profit organization that advocates for a world free from hazardous chemicals. ChemSec believes these substances represent one of the biggest and most serious threats to our health and environment. Through independent research, cross-border collaboration and practical tools, ChemSec is driving the development of more progressive chemicals legislation and pushing businesses towards the transition to non-toxic alternatives.

ChemSec considers that hazardous chemicals can be found in clothing, consumer electronics, packaging and many other products which surround people in their everyday lives. Hazardous chemicals spread throughout the environment, increasing the risk of cancer and infertility, among other things. ChemSec wants to prevent this from happening.

ChemSec operates globally to facilitate contact between decision makers, companies and research in the fight against hazardous chemicals. They advocate for progressive legislation, sustainable corporate chemicals management and offer guidance to companies committed to changing the way they work with chemicals. Among other things, ChemSec are developing the SIN List and a host of other online tools, which guide companies forward and show how they can reduce the use hazardous chemicals in their products and supply chains. They also pursue dialogue with investors seeking to avoid the financial risks associated with production and the use of toxic chemicals.

Based in Göteborg, Sweden and founded in 2002, ChemSec engages the work of chemists, political scientists, business experts and communicators, among others. Their organization is run with financial support from the Swedish Government, foundations, private individuals and other non-profit organizations. The World Wide Fund for Nature, the Swedish Society for Nature Conservation, Friends of the Earth Sweden and Nature & Youth Sweden are represented on the ChemSec board of directors.

Among the employees of ChemSec are one chemical engineer and a toxicologist.

The SIN List is a globally used database of chemicals likely to be banned or restricted in the near future. The chemicals on the SIN List have been identified by ChemSec as Substances of Very High Concern (SVHC) based on the criteria established by the EU chemicals regulation REACH.

The aim of the SIN List is to spark innovation towards products without hazardous chemicals by speeding up legislative processes and giving guidance to companies and other stakeholders on which chemicals to start substituting. According to ChemSec more than 10,000 users search the SIN List every year — it is a publicly available, free-of-charge database.

The SIN List is a comprehensive list of substances that have been identified by ChemSec as fulfilling the criteria for SVHC, as described in the EU chemicals regulation REACH article 57. Three categories are included in REACH article 57, and the SIN List encompasses substances from them.

The first category is chemicals that can cause cancer, alter DNA or damage reproductive systems. These are called CMR substances (Carcinogenic, Mutagenic or Toxic to reproduction.)

The second category are harmful substances that do not easily break down and accumulate in the food chain. These are known as PBT substances (short for Persistent, Bio-accumulative and Toxic). There is also the abbreviation vPvB, short for very Persistent and very Bio-accumulative.

The third category is called “substances of equivalent concern”. This category covers substances that are not automatically covered by the other two categories, but which nonetheless give rise to equivalent level of concern in terms of potential damage to health and environment. For example, this category includes potential endocrine disrupting chemicals.

All substances on the SIN List have been screened to identify substances covered by the authorization provisions in REACH. Substances exempt or otherwise not regulated by REACH, such as pesticides, intermediates and unintentionally produced substances, are not included.

All information used for selection and assessment of substances for the SIN List is publicly available. For CMRs the official CLP (Classification, Labelling and Packaging) classification has been used. These substances have been agreed on an EU-wide basis to have properties corresponding to the SVHC criteria.

PBT and vPvB chemicals for the first version of the SIN List were added directly from the European PBT Working Group List which was developed by the former European Chemicals Bureau (ECB), the duties of which have since been taken over by ECHA.

Equivalent level of concern substances (REACH article 57f) added to the SIN List have undergone a more in-depth scientific evaluation and case-by-case assessment, based on publicly available peer-reviewed scientific studies. This has also been the case for evaluation of PBTs/vPvBs in 2014.

ChemSec states that the absence of the substance on the SIN List does not indicate that this is a non-hazardous chemical. There are several reasons for why a substance has not been added: it was never present in the “starting material” for an update (typically other priority lists, reports and review studies) or it was assessed but there was at the time not enough available data to include it on the SIN List. Therefore, the SIN List should not be considered as a final list, but rather an important first step towards a more comprehensive list of SVHCs in need of regulation.

ChemSec has published a more detailed description of the methodology employed for inclusion of substances on the SIN List.

According to ChemSec companies use the SIN List as a hands-on instrument to identify chemicals before they are classified as SVHCs and placed on the Candidate List. ChemSec asserts that substitution of chemicals is a complex task and it recommends companies to start developing new solutions well ahead of legislation.

ChemSec states that investors and financial analysts are using the SIN List to avoid investing in companies producing substances likely to be banned, and the financial risk that implies.

They further say that regulators and authorities use the SIN List in the EU but also beyond: in legislative processes foremost in the US and Asia.

ChemSec states that health, environmental and consumer NGOs are using the SIN List as a campaign tool when prioritizing individual chemicals or groups of chemicals for campaigning urging safer products and stronger chemicals regulations.

ChemSec also offers users access to SINimilarity which is a new tool to make it easier to avoid non-sustainable and regrettable substitution. When using ChemSec's online search function and searching for a substance that is not on the SIN List, users can find out how similar it is to the substances on the SIN List. This is now possible for about 500,000 substances. For substances that are similar to those already on the SIN List in terms of structure and function ChemSec recommends further investigations before use.

ChemSec cautions that the SIN groups "Petroleum" and "Mineral fibres" contain substances of very complex chemical composition. Substances in these groups are for this reason not used in the SINimilarity tool. Inorganic compounds and many salts are not suited for the similarity methods used in SINimilarity. This is especially true for many compounds in the metal groups. The similarity will be too low to be shown. If the substance contains a group specific metal, it will be identified, which is the most useful information on metals in the majority of all cases.

B11.2. Scope of Chemicals Addressed

Only substances covered by the authorization provisions in REACH are candidates for inclusion on the SIN list. Substances exempt or otherwise not regulated by REACH, such as pesticides, intermediates and unintentionally produced substances, are not included. For a more detailed description of the scope of substances covered please reference the chapter entitled European Chemicals Agency (ECHA) Website on EHS Information on Chemicals.

As of this writing, there are 916 substances included on the SIN list. ChemSec speculates that over time the SIN list could grow to an estimated 2000 substances.

B11.3. Ease of Access and Use of Chemical Information

The SIN List can be searched by:

- CAS#

- Chemical Name

It can also be filtered by:

- Health and Environmental Concerns (e.g., endocrine disruptor, carcinogen, mutagenic, toxic to reproduction, PBT/vPvB, etc.)
- Uses (9 categories)
- REACH status
- Date of first appearance on the SIN list
- Production Volume (4 categories)
- SIN List Groups (see below for description)
- Producers (alphabetized list)

The substances on the SIN List are grouped according to structural similarity (SIN List Groups), to make the list as user-friendly as possible. Almost all of the SIN List substances are divided into 31 groups, and some SIN chemicals belongs to several groups. Examples of these groups are bisphenols, phthalates and perfluorinated compounds.

Icons are available for clicking on to view the entire SIN list or to create an Excel Spreadsheet with the results of a users' search.

No users guide for conducting searches could be located, but the search process is very intuitive.

B11.4 Breadth and Depth of EHS Information Available

Only a limited amount of EHS information is available from a search of the SIN List database, including:

- A short description of the reason for inclusion on the SIN List
- REACH status
- Hazard class and category code(s)
- Synonyms
- EC number
- CAS#
- Hazard statement code(s)
- Registered production volume
- (Bio)monitoring data, if available
- Possible uses
- Registered use(s) - Sector End Use (SU)
- Chemical formula
- Substitution options (if identified by ChemSec)
- Producers (company names)

Absent from the database is any discussion of safe levels of exposure, typical exposure levels encountered during normal use or of risk assessments that may have been conducted by any parties.

B11.5. Quality of Underlying EHS Information

The SIN List is developed by ChemSec in close collaboration with scientists and technical experts, as well as an NGO advisory committee of leading environmental, health, women and consumer organizations

mainly in Europe but also in the US. The list is based on publicly available information from existing databases and scientific studies, as well as new research.

Users will not find the scientific references to substantiate the reasons for each substance in the SIN List database, but ChemSec encourages those who wish to have the references send them an email, and they will forward the background data for the substances of interest. Note that for substances having already an official classification as being CMR – this is enough for inclusion on the SIN List and ChemSec does not have additional background data.

B11.6. Procedures for Updating the Database with New Information

Over time, new information on the hazardous properties becomes available. The political discussions and the interpretation of REACH criteria can also be slightly modified over time. In order to keep the SIN List up-to-date with the developments, regular updates are needed.

The SIN List was first developed in 2008, and was been updated in 2009, 2011, 2013, 2014 and 2017. Different procedures for updating have been used at various points of time.

B12. International Council of Chemical Associations (ICCA) Global Product Strategy (GPS) and Global Chemicals Portal

The information presented below represents a summary of key information about the environmental, health and safety (EHS) information on industrial chemicals that is available from the International Council of Chemical Associations' (ICCA) Global Product Strategy (GPS) and Global Chemicals Portal.

For more detailed information, the reader should consult directly with the [ICCA website](#).

B12.1. Overview/Description

ICCA describes itself as the worldwide voice of the chemical industry. It represents chemical manufacturers and producers around the world. It's members account for more than 90% of global chemical sales, and more than 20 million people around the globe are employed directly or indirectly by this industry.

In February 2006 in Dubai, the International Conference on Chemicals Management, meeting under the auspices of the United Nations, adopted the Strategic Approach to International Management (SAICM), a framework for global chemicals management. At that meeting, the chemical industry represented by ICCA, introduced its GPS initiative to address public concerns regarding chemicals in commerce and to meet evolving national, regional and international chemical management policy pressures.

The product stewardship activities under GPS and also ICCA's Responsible Care® Global Charter are industry's global voluntary initiatives that will contribute to SAICM implementation. The GPS is also the program under which ICCA has established and promoted its Principles for Chemical Management Systems, sponsors "capacity building" initiatives and establishes partnerships with intergovernmental organizations. GPS also provides a platform for ICCA advocacy and communication.

The centerpiece of GPS is the enhancement and expansion of product stewardship best practices within the industry and throughout the value chain. The effort unites several current stewardship initiatives under the auspices of the Responsible Care® program, builds a foundation for continual improvement in product stewardship, fosters greater transparency to external stakeholders and marks a major drive to take product stewardship to a higher level within the industry.

The ultimate purpose of GPS is to increase public and stakeholder awareness of, and confidence in, the safe management of chemicals throughout their lifecycle by demonstrably increasing chemical industry performance and transparency.

Through its signature capacity building workshops and accompanying guidance materials, GPS is designed to help those countries which may lack the capacity to manage chemicals safely to learn how to put that capacity into place – and maximize the social, economic and environmental benefits that come with a safe, strong and sustainable manufacturing industry.

To accomplish its mission, ICCA is focused on achieving progress in four key areas:

- **Product Stewardship:** The responsibility to understand, manage and communicate the health and environmental impacts of chemical products at each point in their life cycle. Product stewardship is the practice of making health, safety and environmental protection an integral part of the life cycle of chemicals. It is an integral component of the global chemical industry's Responsible Care® initiative and includes evaluations of risks and the development of actions to protect human health and the environment commensurate with those risks. Product stewardship is described by ICCA as a shared responsibility between chemical producers, their suppliers and their customers. It requires the development of close, sustained dialogue and working relationships with suppliers, customers, and others in relevant value chains. These parties should share information up and down the value chain to ensure that chemicals are used and managed safely throughout their life-cycle. In doing so, they will also help companies and their partners meet the increasing demand for safe and environmentally-sustainable uses of chemicals.
- **Risk Assessment and Risk Management:** The scientific evaluation of a chemical's hazards, uses and exposures to determine the probability that it will cause adverse effects under real-world conditions, which determines if steps are needed to reduce the risk of harm or misuse.
- **Stronger Chemicals Management Globally:** Promoting risk-based chemicals management through a mix of government rules, voluntary industry programs, and publicly-sponsored training and recognition programs, particularly in countries without robust chemical management systems.
- **Transparency:** Providing health, safety and environmental information about chemicals to stakeholders and the public to enable customers, regulators and consumers to understand how chemistries can and should be used safely.

ICCA has delivered a number of work products to further its GPS goals, including:

- 1) Global Product Stewardship Guidelines. The guidelines address only product stewardship and assume that companies have effective programs addressing worker health and safety, process safety, pollution prevention and other aspects of the industry's Responsible Care® initiative that are also necessary to achieve the 2020 goal. The product stewardship guidelines were developed to facilitate improvement in industry performance. They are based on common elements of existing ICCA member association programs and include principals to be applied to

research and development, raw materials procurement, manufacturing, sales, distribution, handling, use, disposal and recycling of chemicals. The guidelines were also designed with enough flexibility to be implemented by small and medium-sized enterprises (SMEs). These guidelines are provided to ICCA member associations for use in the development of their own regional or country-specific product stewardship programs, to be implemented by their member companies. The voluntary regional and country programs based on these guidelines should be designed with enough flexibility to account for national and regional legal, societal, economic and cultural conditions. The eventual adoption of product stewardship programs by ICCA member associations and the implementation of product stewardship programs by ICCA member companies will demonstrate the global industry's commitment to the safe management of chemicals.

- 2) Guidance on Risk Assessment. This guidance document was written for use by small- and medium-size companies and governments in developing economies. It provides a step-by-step guide for conducting chemical risk assessment and management. Since the first International Conference on Chemicals Management (ICCM-1) was held in 2006, ICCA has conducted more than 170 capacity building projects and events in 46 countries. Capacity building is a tool for companies to share best EHS practices and improve product stewardship performance throughout the supply chain, supporting the goals of SAICM.
- 3) Regulatory Toolbox. The guidance provides governments in developing economies who are considering introducing or revising their legislation/regulation on chemicals management. It covers principles as well as a detailed description of GPS elements and how they can be integrated into national legislation/regulation. The toolbox consists of modules in order to take the different situations of countries into account.
- 4) The GPS Chemical Portal -- The GPS Chemicals Portal is a publicly accessible online database with detailed product summaries for more than 90 percent of the world's most highly traded chemicals (as of April 2016). The summaries provide the most relevant product safety information from companies on the chemical products they manufacture in a language that non-specialists will find easy to understand. Anyone can access the GPS portal to find out more about chemical products in use today.

ICCA has established the GPS Chemicals Portal to provide the public with easy access to science-based, reliable information on chemicals. The GPS Safety Summaries contained on the Portal provide the most relevant product safety information from individual companies on the chemical products they manufacture in a language that non-specialists will find easy to understand.

To date, more than 4,500 GPS Safety Summaries are available on the GPS Chemicals Portal, and ICCA member companies continue to post summaries to the site. Establishing a base set of information and publishing GPS Safety Summaries for their chemicals in commerce is part of the GPS commitment of ICCA member companies – and part of the chemical industry's commitment to transparency.

B12.2. Scope of Chemicals Addressed

The focus of GPS and the Global Chemicals Portal is on industrial chemicals in commerce; however, each participating company is free to define the scope of their substances to best meet its own particular needs. Some companies have elected to include the full range of products they manufacture and sell (e.g., pesticides, biocides, polymers, seeds, articles that contain chemicals, etc.), while others have chosen to restrict their scope to industrial chemicals. Users are directed to individual company websites to determine the scope of products covered. Of course, GPS Safety Summaries are only available from companies that voluntarily agree to participate.

B12.3. Ease of Access and Use of Chemical Information

The [ICCA GPS Chemical Portal](#) is searchable for substances by:

- Chemical Name
- CAS#
- Chemical EINECS (European Inventory of Existing Commercial Substances) Number
- Brand/Product Name
- Product Category (39 separate categories)

The following terms can be used to narrow a search and return fewer results:

- Organization/Company
- Language

There is currently no published search guidance available from the GPS Global Chemical Portal website; however, the search process is rather intuitive. ICCA can be contacted directly for assistance if users experience any difficulties with searching the portal.

The output from a search of the GPS Portal is a report of the chemicals that meet the user's specified search criteria and the names of the companies associated with those chemicals. A click on each company name takes the user to a page that includes a link to the available GPS Safety Summary for that substance.

B12.4. Breadth and Depth of EHS Information Available

The format, breadth and depth of EHS information contained in the GPS Safety Summary varies from company to company, although most often the user will find the following information described:

- An executive type summary of the information contained in the GPS Safety Summary
- Manufacturing information, sometimes including production process, capacity and where the product is manufactured
- A description of the product, including physico-chemical properties
- Intended uses for the product
- How the public might be exposed to the product under various scenarios
- Human health information (e.g., mammalian toxicology and epidemiology)
- Environmental information (environmental fate and eco-toxicity)
- Physical hazard information (e.g., reactivity, flammability, etc.)
- Regulatory information
- Web links to references, Safety Data Sheets and other relevant information about the product

In an effort to facilitate the preparation of GPS Safety Summaries, the European Chemical Industry Council (CEFIC) has developed and made available tools that assist companies to transfer the relevant information from EU REACH dossiers.

B12.5. Quality of Underlying EHS Information

ICCA includes the following disclaimer on its website:

“This portal is intended to provide the user with access to product stewardship information available to the public on ICCA member company or association websites.

ICCA is not responsible for the content posted on these other websites, does not warrant the accuracy of information posted on these other websites, and does not monitor the content posted on these other websites.

Information for the chemicals listed has been developed independently by each company (or in some cases, a group of companies). Each company is responsible for the content of its own GPS Safety Summary.

For more information about the content on these other websites, users should contact the companies that post the information.”

Because the information derives from companies which manufacture and sell these chemicals, some stakeholders may perceive them to have a potential conflict of interest and may view the quality of EHS information skeptically. On the other hand, other stakeholders may recognize that these companies have regulatory obligations that can carry substantial fines and penalties should they publish false or misleading information. Furthermore, in some countries (e.g., US), those companies can face extensive criminal and civil liability if they are found guilty of failing to adequately warn the public about risks associated with exposures to their products. This liability may extend to GPS Safety Summaries.

B12.6. Procedures for Updating Database with New Information

It is up to each company that participates in the ICCA Global Chemical Portal to maintain the currency of EHS information it posts for its products on its web site. Users should consult individual company websites to determine how they do this. Companies have strong incentives to keep the information up to date as they face both regulatory obligations and criminal and civil liability if the information is inaccurate and/or misleading.

B13. The Republic of Korea Government EHS Databases

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the South Korean government.

The main database maintained by Korea is called the National Chemicals Information System (NCIS).

B13.1. Overview/Description

The Korean Toxic Chemicals Control Act (TCCA) was implemented in 1991 by the Ministry of Environment (MOE) for the overall management and control of industrial chemicals in Korea. The latest revised version took effect on 21 Mar 2008. The purpose of this Act is to prevent any risk caused by chemicals to human health.

The National Institute of Environmental Research (NIER) is responsible for new chemical notification under the Act). The Korea Chemicals Management Association (KCMA) of MOE is responsible for accepting declaration for details of other chemicals and application for confirmation certificate.

On January 1, 2015, the TCCA was divided into Korea REACH (also known as K-REACH) and the Chemicals Control Act (CCA). K-REACH focuses on registration and evaluation of substances while CCA focuses on the control of hazardous substance and prevention and response to chemical accidents. K-REACH was substantially amended and will now come into force on 1 Jan 2019.

Under amended K-REACH, any person who intends to manufacture or import a new chemical substance or at least one ton per year of an existing chemical substance shall register the chemical substance ("registration") according to the following requirements:

- New substances must be registered prior to manufacture or import.
<100kg/y new substances only require notification and do not need to go through hazard evaluation.
- All ≥ 1 t/y existing chemical substances (excluding exempt substances) must be registered within given grace periods.
- To benefit from the grace periods for existing substances, manufacturers and importers of ≥ 1 t/y existing chemical substances must notify their company info, substance name, volume, classification and use info to the MoE in advance ("pre-notification").
Foreign manufacturers who export chemical substances to Korea may appoint a Korea-based representative to submit pre-notification or registrations.

The Korea Existing Chemicals Inventory (KECI) is issued jointly by the MOE and Ministry of Labor (MOL) and currently includes more than 44,000 chemicals substances. The free online inventory is available for searching.

Korea MOE estimates that approximately 400 new chemicals are produced or imported annually in Korea, and that Korea has slightly fewer than 300 HPV ($>1,000$ tons/year) chemicals in commerce.

Under Korea CCA, an existing chemical is a chemical that was domestically commercialized prior to February 2, 1991 and was designated and published by the MOE in consultation with the MOL. The current KECI consists of three parts:

- Chemical substances which were placed on Korean market before Feb. 2, 1991, and notified by the MOE on Dec. 23, 1996 ($>35,661$ chemical substances); Korean Existing chemical numbers (KE) numbers are given.
- Chemical substances which were notified after review of hazard by the MOE, after Feb. 2, 1991 ($>3,603$ chemical substances); NIER numbers are given.
- Chemical substances which were notified on Nov. 21, 2005, by the President of the NIER, to be added to the KECI ($>1,360$ chemical substances); KE numbers are given.

Pursuant to the CCA, manufacturers or importers of new chemical substances are required to make notification to relevant authorities prior to the commencement of their commercial activities if the volume of the new substance exceeds 0.1 ton per year. KE numbers and NIER numbers are necessary for customs clearance.

Dangerous chemicals are currently classified into 900 types of poisonous substances and substances requiring preparation for accidents, 6,000 types of single dangerous substances, and energy and high-pressure gases.

Target substances and control methods vary among government ministries. In the case of the MOE, chemicals that have a high likelihood of accidents or are likely to cause major damage are designated as substances requiring preparation for accidents (69 types). Any facility that handles a certain amount or more is required to formulate and submit a self-prevention plan containing information on the toxicity of the substance concerned, status of control facilities and equipment owned, safety control organizations, staff and organization charts, and emergency measures to address any accidents.

Toxic chemicals are classified into poisonous substances and substances under observation according to the degree of toxicity identified in toxicity examination and safety tests (i.e., acute oral toxicity, genetic toxicity, biodegradability, fish acute toxicity, daphnia toxicity, algae toxicity). In order to import any poisonous substance, the type and purpose thereof must be declared to KCMA. The production or use of any such substance requires a poisonous substance business registration at the local government. According to a 2013 performance report, 45,046 thousand tons of poisonous chemicals were distributed, with 37,675 thousand tons manufactured and 7,371 thousand tons imported. There are 7,200 businesses selling poisonous substances.

Substances that are deemed likely to be carcinogenic are designated as substances under observation. The manufacture or import of any substance under observation must be declared to KCMA, but unlike poisonous substances, there are no special regulations regarding business operation.

There are special provisions for substances that are identified as being particularly harmful according to the results of risk assessments and those that are restricted or prohibited by international organizations and international agreements. Restricted substances are significantly harmful when used for certain purposes and therefore distribution and use is prohibited for these specific purposes, while prohibited substances are prohibited under all circumstances. Currently 12 types of restricted substances and 60 types of prohibited substances have been designated.

New substances notified under TCCA are regarded as notified under Korea REACH.

The purpose of Korea REACH is to protect public health and the environment through these provisions:

- Registration of chemical Substances;
- Screening of hazardous chemical substances;
- Hazard and risk assessment of products containing chemical substances and hazardous substances;
- Sharing information about chemical substances.

Manufacturers or importers in Korea must register the follow substances:

New chemical substances;

Designated existing substances manufactured, imported or sold more than 1 ton per annum.

Important notes:

- The difference between registration and notification registration requires submission of hazard data. Notification only involves submission of some administrative information.
- Like EU REACH, K-REACH also restricts the use of certain hazardous chemical substances in consumer products and articles.
- The latest K-REACH restricted substances list (2017 version) restricts 12 chemical substances in various products such as paints, furniture and household products.

The 12 chemical substances are:

- Malachite green (CAS 10309-95-2) and its salts
- Methyl bromide (CAS 74-83-9)
- Carbon tetrachloride (CAS 56-23-5)
- Tributyltin compounds (CAS 4782-29-0 and other CAS)
- Formaldehyde (CAS 50-00-0)
 - Nonylphenol and nonylphenol ethoxylate (CAS 104-40-5 and other)
- Chrysotile (CAS 12001-29-5)
- Lead (CAS 7439-92-1)
- Cadmium (CAS 7440-43-9)
- Chromium (VI) compounds (CAS 18540-29-9 and other)
- Trichlorethylene (CAS 79-01-6)
- Tetrachlorethylene (CAS 127-18-4)

The detailed restriction conditions for the above chemical substances may be found by inputting their CAS# to the NCIS.

New substances must be registered prior to production or importation. Designated existing substances must be registered within a given grace period (Maximum of 8 years).

Similar to EU REACH, foreign manufacturers exporting chemical substances or products containing hazardous chemical substance into South Korea may appoint an Only Representative to fulfill relevant obligations under K-REACH. Only designated existing substances imported or manufactured above 1t/y require registration in South Korea. Even for designated existing substances($\geq 1\text{t/y}$), registration can be waived if the substances meets any of the following criteria:

- Chemical substances imported as incorporated in machines;
- Chemical substances imported along with machines or devices for test runs;
- Substances contained in a product in a solid form to perform a certain function without being released during normal use.
- Chemical substance manufactured or imported less than 10 tons per year and exported in its entirety. In this case, an application of exemption from K-REACH must be submitted to the MOE.

Note: Chemical substance ($\leq 1\text{ ton/y}$) must also be registered if considered to cause significant damage to human beings health or the environment.

Note: Polymers must also be registered as substances under Korea REACH. This is different from EU REACH, under which only monomers are registered.

A new substance is defined as a substance that is not on the following lists:

- Chemical substances which were placed on Korean market before Feb. 2, 1991, and notified by the MOE on December 23, 1996; and

- Chemical substances which have undergone the examination of toxicity under the former provisions or the provisions of the TCCA after February 2, 1991 and were announced by the MOE.

The following information is required for registration:

- The name, address and representative of a manufacturer or an importer or an only representative;
- Information that identifies a chemical substance including its name, molecular formula and graphic formula;
- Identified uses of the chemical substance;
- Classification and labeling of the chemical substance;
- Physical and chemical properties;
- Hazard data (mammalian toxicology./eco-toxicology data);
- Risk associated with the chemical substance including exposure scenarios describing how to handle and control it (Applicable only when the substance is manufactured or imported in 10 tons or more per year);
- Guidance on safe uses (including protective equipment, response to an explosion, a fire or a leak);
- Other information specified in the Environment Ministerial Decree
- Data requirements for some specific chemical substances designated by Presidential Decree will be reduced;
- Test proposals including test information and schedules may replace certain data endpoints.

Note: the deadlines of risk assessment are separated from the deadlines of registration.

Note: For some new substances and designated existing substances (i.e., <1t/y new substance, substance for R&D, new polymer of low concern, i.e.), registration data can be reduced according to presidential decree.

Similar to EU REACH, Korea REACH also requires joint submission if there are multiple producers/importers of that substance.

- Hazard data must be submitted by a lead registrant on behalf of other registrants and joint registrants will submit their own dossier individually;
- Any person who intends to submit a registration later may use registration data submitted by another applicant after obtaining the owner's permission;
- Any person who intends to submit a registration may inquire of the MOE about previous registration data of the same chemical substance;

Individual submission (or opt out) is possible when:

- Exposure of CBI causes commercial damage;
- Joint submission costs more than individual submission;
- Other cases are listed in Presidential Decree;

However, a "Confirmation of Individual Submission" from the MOE is required for individual submission.

Deadlines of registration for designated existing substances have been set by MOE as follows:

- First 510 existing substances ≥ 1 t/y: 1 July 2018
- ≥ 1000 t/y and CMR substances ≥ 1 t/y: 31 December 2021
- 100-1000t/y: 31 December 2024

- 1-100t/y: 31 December 2030

As of the morning of 28 June, 2018 **MOE reported** that there had been 321 submissions, 194 of which were reported as complete registrations.

Note: Some substances and uses (i.e., R&D substance, export-only use, polymer of low concern) are exempt from full registration. However, companies need to apply for confirmation on exemption.

Any person who intends to manufacture or import an existing chemical substance to be registered will be allowed to manufacture or import without registration during the above grace period.

Note: The MOE will designate existing substances to be registered in three lists based on:
Chemical substance circulation in Korea; and
Results of hazard assessment and risk assessment.

Risk assessment are conducted if a chemical substance is:

- Manufactured or imported in 10 tons or more per year; or
- Deemed as one requiring risk assessment after hazard assessment.

If necessary, the MOE may request additional data for the risk assessment.

The MOE is responsible for the evaluation of registration data received. Based on the results of hazard assessment and risk assessment, substances may be put into the following categories after evaluation:

- Toxic substance: designated by MOE after hazard evaluation;
- Authorization substance: means a chemical substance listed by the MOE after consultation with the head of the relevant central authority and deliberation by the Chemical Substance Assessment Committee (part of NIER) as one potentially hazardous and thus requiring permission from the Minister before its manufacture, import or use;
- Restricted substance: means a chemical substance as listed by the MOE after consultation with the head of the relevant central authority and deliberation by the Chemical Substance Assessment Committee as one deemed highly hazardous if used for a specific purpose and thus required to be banned from its manufacture, import, sales, stocking, storage, transport or use for that purpose;
- Prohibition substance: means a chemical substance as listed by the MOE after consultation with the head of the relevant central authority and the deliberation by the Chemical Substance Assessment Committee as one deemed highly hazardous and thus required to be banned from its manufacture, import, sales, stocking, storage, transport or use for any purpose.

Anyone who transfers a registered chemical substance or preparation containing the substance must provide the following information to downstream users:

- registration number;
- substance name;
- information about hazard and risk;
- safety control information;

In the event that a safety data sheet (SDS) is required under the Occupational Safety and Health Act (OSHA), the information mentioned above must be provided through the SDS.

Supply of information on chemical substances must be made only when the relevant chemical substance or preparation is transferred to be used as raw material for a product or for final consumption at the transferee's workplace.

For repeated transfer, the information may be provided only once at the first transfer.

Any person who provided or received information must inform the other party of any change in the provided information within one month from when they become aware of it. This must be done within one month from when the change was found.

Unlike EU REACH, K-REACH has special provisions for products. A product means an item used by an end user or its component or part with a possibility to cause consumers to be exposed to a chemical substance and the product could be a preparation or an article. There are two requirements for products: product notification and risk assessment.

Anyone who produces or imports a product containing a hazardous substance at one ton or more per year must notify to the MOE the name and content of the substance, the type of hazard, and its uses before they start producing or importing the article. An article that does contain any substance intended to be released under normal conditions of use is excluded from reporting.

Any product may be produced or imported as set out in the Environment Ministerial Decree without reporting because:

- Exposure to human beings or environment can be avoided under normal conditions of use; or
- The chemical substance has been registered for that use.

However, an application of exemption needs to be submitted to MOE for the above two cases.

Risk assessment must be performed on "risk-concerned" products by institutions or experts appointed by the MOE. A potentially risky product means a chemical product listed by the MOE after consultation with the head of the relevant central authorities as one deemed potentially hazardous to people or the environment, including, but not limited to:

- Consumer product: A product used by consumers on their daily lives such as a detergent, an air freshener, an adhesive, a polisher, a deodorant, a bleach or a fabric softener.
- Biocidal product: A product used to kill, interrupt or immobilize harmful organisms except for human beings and animals such as an insect repellent, a sanitizer or a preservative.

After risk assessment, the MOE must establish safety and labelling standards for risk-concerned products. The safety and labelling standards specify, for example, hazardous chemical substances that cannot be used in certain products and the content, yield or evaporation of hazardous chemical substances contained in the article. Once safety and marking standards have been published, MOE can take actions (sales ban or recall) against:

- any product not compliant with the safety and labelling standards.
- any product with no such standards in place and thus deemed likely to cause damage to people or environment.

The Consumer Chemical Products and Biocides Safety Act is a new chemical regulation proposed by the MOE in South Korea. Also known as K-BPR, the Act regulates consumer chemical products, biocidal products and biocide-treated articles. It is expected to be published in 2018 and come into force on 1 Jan 2019.

The consumer chemical product part is proposed to be transferred from K-REACH while the biocide part is taken from EU biocidal products regulation (BPR). For consumer chemical products, the Act requires that companies comply with relevant product safety and labelling standards and confirm compliance to authority by carrying out testing once every 3 years. For biocidal products (both active substances and formulated products), the Act requires that companies apply for pre-market approval from the Ministry of Environment (MOE). In addition, the Act has set some rules for biocide-treated articles.

B13.2. Scope of Chemicals Addressed

CCA covers new chemicals, toxic chemicals, chemicals under observation (as defined above) and restricted or banned chemicals.

The following products are out of scope for CCA:

- Radioactive substances as prescribed by the Atomic Energy Act
- Medicines, non-pharmaceutical drugs, and cosmetics as prescribed by the Pharmaceutical Affairs Act
- Narcotics and psychotropic drugs as prescribed by the Act on the Control of Narcotic Drugs and Other Analogous Substances
- Cosmetics as prescribed by the Cosmetics Act
- Technical ingredients and agrochemicals as prescribed by the Agrochemicals Control Act
- Fertilizers as prescribed by the Fertilizer Control Act
- Foods and food additives as prescribed by the Food Sanitation Act
- Livestock feeds as prescribed by the Control of Livestock and Fish Feed Act
- Explosives as prescribed by the Control of Firearms, Swords, Explosives, etc. Act
- Toxic gases as prescribed by the High-Pressure Gas Safety Control Act
- Scope of K-REACH

In Scope:

Substance on its own, including new substances¹ and existing substances

Substances in mixtures

Product² containing a priority control substance

Out of scope:

Naturally occurring substances

Chemicals subject to other laws: cosmetics and raw materials, pesticides, pharmaceuticals, medical devices, fertilizer, etc.;

¹New substance' is a substance that is not listed on Korean Existing Chemicals List (KECL). More info about KECL can be found [here](#).

²'Product' is a unique concept under K-REACH. A product means a mixture or an article used by consumers or a component of the mixture or the article that may expose consumers to chemical

substances. Manufacturers and importers of products containing >0.1% and ≥1t/y priority control substances shall submit product notification to the MoE.

B13.3. Ease of Access and Use of Chemical Information

The Korean NCIS can be searched using CAS#, Chemical name in Korean, Chemical name in English, Chemical Number (Toxic substance, Phase-in substance, and Chemical's unique number, etc.). Searches are intuitive and there is no English language guidance available for assisting users.

- Currently, there are records available for 44,356 chemical substances. These substances have been classified as:
- Phase in substances subject to registration — N = 523
- Toxic substances — N = 1,861
- Restricted substances — N = 100
- Prohibited substances — N = 106
- Substances requiring preparation for accidents — N = 99

B13.4. Breadth and Depth of EHS Information Available

Currently, there is very little EHS information available from a search of NCIS. Instead, one can only learn the regulatory classification of substances as noted above, and the nature of any restrictions or prohibitions that have been placed on the manufacture, importation or use of those substances. Presumably, at some point in the future, the MOE will make the results of its risk assessments publicly available, but it is not known whether they will be translated into English.

B13.5. Quality of the Underlying EHS Information

Companies that produce or import chemical substances are required to provide MOE with chemical substance identity, classification and labelling, available hazard use and exposure information and proposed risk management measures. MOE and the Chemical Substance Assessment Committee are responsible for evaluation of the information received, for conducting a hazard assessment and for deciding the regulatory classification of each chemical substance. Risk assessments must be performed on “risk-concerned” products by institutions or experts appointed by the MOE. As of this writing, English language documents that specify procedures for conducting this work, including peer review and opportunities for public comment, could not be located.

B13.6. Procedures for Updating the Database with New Information

New chemicals must be notified to MOE prior to their manufacture or import and are then added to the NCIS database.

CCA requires companies to notify the MOE of any changes affecting their safe manufacture of substances.

K-REACH requires companies to notify MOE of any of the following changes affecting substances which they have registered:

- If the annual amount of substance manufactured or imported changes beyond the range prescribed by MOE;
- If there is a change in the uses, hazards, and risks of the substance; or
- If there is a change in the name, location, or representative of the registrant.

There are fines and penalties prescribed for companies which fail to comply with CCA or K-REACH, including possible imprisonment for responsible parties.

B14. Australian Government EHS Databases

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the Australian government.

The main approach to industrial chemicals management taken in Australia is called the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). It helps protect the Australian people and the environment by assessing the risks of industrial chemicals and providing information to promote their safe use. NICNAS is administered by the Australian Department of Health.

NICNAS' focus is the industrial use of chemicals. This covers a broad range of chemicals used in inks, plastics, adhesives, paints, glues, solvents, cosmetics, soaps and many other products. [For more detailed information about NICNAS, the reader is directed to their website.](#)

B14.1. Overview/Description

Beginning in the late 1980's and continuing through the 1990's and 2000's, the Australian government adopted several laws and regulations to ensure the safe management of chemicals.

These laws empower NICNAS to:

- provide a national system to assess new industrial chemicals for health and environmental risks;
- maintain the Australian Inventory of Chemical Substances (AICS);
- manage the Register of Industrial Chemical Introducers;
- compel commercial importers and/or manufacturers to notify industrial chemicals that are new to Australia;
- provide information and make recommendations about chemicals to other government agencies responsible for the regulation of industrial chemicals;
- administer the Cosmetic Standard 2007;
- collect statistics on the use of industrial chemicals in Australia;
- and ensure Australia meets its obligations under international agreements about Chemicals.

In Australia the introduction of chemicals—whether by importation and/or manufacture—is regulated at a national level. Four schemes make up the Australian Government's regulatory framework for chemicals at the national level, with each scheme focusing on particular areas of use. NICNAS is part of this framework and is responsible for industrial chemicals.

NICNAS is not responsible for the following uses of chemicals. If a chemical has multiple uses the requirements of each applicable scheme must be followed.

- Pesticides, agricultural products, veterinary medicine, food for animals, pool sanitizers.

Chemicals used for the following purposes are not regulated by NICNAS. They are regulated by the Therapeutic Goods Administration.

- Medical devices (including sterilants and disinfectants) and in vitro diagnostic devices
- Medicines (includes prescription, over-the-counter and complementary/alternative medicines)
- Biologicals
- Primary sunscreen products
- Sterilants and disinfectants.
- Food for humans

NICNAS does not regulate the use or disposal of chemicals. Instead, it promotes the safe use of industrial chemicals by providing information and recommendations to other regulators. NICNAS works closely with a range of regulatory partners at all levels of government.

The full costs of administering NICNAS are recovered through fees and charges paid by industrial chemical importers and manufacturers. Their main fees are generated through chemical registrations and assessments. NICNAS also collect fees for services provided to new industrial chemical notifiers, holders of confidence and other parties, based on 'fee for service' schedules in accordance with the administered regulations.

There are 5 program areas at NICNAS with 3 areas focused primarily on scientific assessment:

- 1) New Chemicals Program — assesses new industrial chemicals notified to NICNAS by importers and/or manufacturers.
- 2) Existing Chemicals Program — conducts assessments of chemicals on AICS which have not previously been assessed in Australia; assesses Priority Existing Chemicals (PECs); and prioritizes and assesses chemicals using the Inventory Multi-tiered and Prioritization (IMAP) framework.
- 3) Targeted Assessment Program — conducts secondary notification risk assessments; assesses chemicals on behalf of other government agencies; and manages the AICS.
- 4) Regulatory Strategy Program — manages business planning, finance, Information Technology, library services and the NICNAS website; works with other government agencies and key stakeholders; coordinates national and international engagement activities; and oversees NICNAS Reforms.
- 5) Registration, Outreach and Reporting Program — manages the registration of introducers; undertakes compliance monitoring and investigates non-compliance; and administers Australia's obligations under the Rotterdam Convention.

A PEC is an industrial chemical that has been identified as requiring an assessment because there are reasonable grounds for believing that manufacturing, handling, storing, using or disposing of the chemical could be a risk to health and/or the environment. Following a chemical assessment by NICNAS, there could be changes in circumstances that would later require particular aspects of a chemical to be re-assessed. This process is called secondary notification and assessment.

NICNAS established the IMAP framework to accelerate the assessment of chemicals listed on the AICS. The objectives of IMAP are to identify and rapidly assess existing chemicals of concern, and support the risk management of industrial chemicals in Australia by enhancing the flow of chemical safety information.

IMAP arose from recommendations of an independent review of the NICNAS Existing Chemicals Program and a subsequent research report by the Productivity Commission.

The IMAP framework was developed in consultation with stakeholders and technical experts and is a science and risk based framework for the assessment and prioritization of chemicals on the AICS.

The IMAP framework provides a more flexible and transparent approach to prioritizing the large number of chemicals on the AICS for assessment in a way that is responsive to the needs of industry (including workers), community and government.

In 2012, NICNAS started assessing about 3,000 chemicals using the IMAP Framework. These so called Stage 1 chemicals were identified based on characteristics agreed by stakeholders as priorities for early consideration and sources subsequently identified by NICNAS and stakeholders.

Companies wishing to commercially import or manufacture a new industrial chemical (that is, a chemical that is not listed on AICS), or a product containing a new chemical, must first check whether it has already been notified to NICNAS and if there are conditions stipulated for using it by searching AICS. Unless an exemption applies, the new industrial chemical will need to be assessed by NICNAS for risks to the environment and human health before it can be imported and/or manufactured.

NICNAS has several databases that present varying levels of EHS information on subsets of chemicals listed in AICS as follows:

PEC Assessments. There are PEC Assessments available for 43 chemicals or chemical families dating from the mid-1990's through the recent past. Most PEC assessments are accompanied by an easy-to-understand fact sheet which summarizes key recommendations for a non-scientific audience.

Tier I IMAP Human Health Assessments. Chemicals listed in this database are not considered to pose an unreasonable risk to the health of workers and public health on the basis of the Tier I IMAP assessment. The Tier I assessment considers both the intrinsic hazard of the chemical and potential human exposure. As such, where hazardous chemicals are included in the list below, all requirements under workplace health and safety and poisons legislation as adopted by the relevant state or territory should be met to minimize risk. The list also contains chemicals which are assessed as posing no unreasonable risk on the basis that there is no exposure to humans or the environment from industrial uses in Australia. This includes: chemicals for which the uses identified are considered excluded under the Industrial Chemicals (Notification and Assessment) Act (1989); and chemicals for which no Australian use, import, or manufacture was reported under previous NICNAS mandatory calls for information. It is important to note that some of these chemicals may be also governed in Australia by other legislation or Australia's commitment under international treaties. Controls on their production, import, export, use and disposal may apply. The list (which is the Tier I assessment output) contains the key information used in the Tier I assessment to determine the potential for exposure (exposure band), including the highest use category that has been considered. More information on exposure bands and use categories are provided in the IMAP Framework document which can be downloaded from their website.

- Tier I IMAP Environmental Assessments. Chemicals included in this spreadsheet are considered not to pose an unreasonable risk to the environment from their notified uses; however, they

could be considered for Tier II assessments in the future should new information become available.

- Tier II IMAP Human Health and Environmental Assessments. The approximately 3300 chemicals included in this spreadsheet were assessed in greater detail because the Tier I assessment indicated a need for further investigation.
- Tier III IMAP Human Health Assessments. The approximately 16 chemicals included in this spreadsheet were assessed in even greater depth because the Tier II assessment indicated a need for further investigation.

Other Assessments include: secondary notification assessments of chemicals previously assessed by NICNAS and targeted assessments (focused on hazard, exposure or use) of existing chemicals for which there were potential health or environmental concerns or relevant new data.

B14.2. Scope of Chemicals Addressed

According to the Australian law, a chemical can be:

- a chemical element, including a chemical element contained in a mixture.
Examples include:
 - a chemical element (such as lead)
 - a chemical compound, including polymers (such as succinic acid or poly(vinyl chloride))
 - a chemical complex, such as ferric ammonium oxalate.
- a compound or complex of a chemical element, including such a compound or complex contained in a mixture.
Examples include:
 - a chemical element in a mixture, such as oxygen in a mixture of gases
 - a chemical compound in a mixture, such as the plasticizer dibutyl phthalate in a poly(vinyl chloride) blend
 - a chemical complex in a mixture, such as ferric ammonium oxalate in an aqueous solution.
- a chemical of unknown or variable composition, complex reaction products or biological material—otherwise known as a UVCB.
Examples include:
 - an unknown or variable composition substance, such as chlorinated paraffin sodium sulfonate, where the degree of chlorination varies
 - a complex product of a chemical reaction, such as tall oil products in reaction with diethanolamine, where the product of a chemical reaction is in a mixture with its reactants
 - biological material (except if is a whole or a whole animal).
- a naturally-occurring chemical, meaning an unprocessed chemical occurring in nature, or a chemical occurring in nature that has been extracted from the parent material through certain defined processes without chemical change.
Examples include:
 - a naturally-occurring biological chemical
 - an inorganic chemical in soil
 - a mineral extracted from ore by a physical process such as dissolution or flotation.

The law also defines what is not considered a chemical as follows:

- an article. This means an item which, due to its use, has been manufactured into a certain shape or design, and which does not change its chemical composition during use.
Examples include:
 - steel ball bearings;
 - compound plastic pipe;
 - adhesive film.
- a radioactive chemical, meaning a chemical with a specific activity greater than 35 becquerels/g.
- a mixture. This means a physical combination of chemicals resulting from deliberate mixing or from chemical reactions, but not a UVCB. However, the components within the mixture may be relevant industrial chemicals.

Furthermore, for the purposes of NICNAS, the law defines what is not a relevant chemical as:

- a naturally-occurring chemical
- biological material that is a whole plant or a whole animal
- an incidentally-produced chemical
- a reaction intermediate, or
- a chemical intended for an excluded use, meaning it is used solely as:
 - an agricultural chemical (includes pesticides and pool sanitizing chemicals)
 - a veterinary chemical
 - a medicine or therapeutic, or
 - a food or food additive.

There are records of approximately 40,000 chemical substances listed in AICS.

B14.3. Ease of Access and Use of Chemical Information

There are two sections of the AICS—public and confidential. If there are no results in the public AICS, users can apply to NICNAS to search the confidential AICS. They will search the confidential AICS if they are satisfied the users are genuinely intending to manufacture and/or import a chemical.

The best option for searching AICS is to use the CAS#. The next best option is to use the CAS Name for the chemical. Users can also search by molecular formula e.g. C₁₂H₁₂N₂O₃, but may get a very large number of results.

NICNAS has published helpful guidance for searching AICS.

Searches of the Tier I IMAP Assessments, PEC Assessments and Other Assessments may be done by CAS# or CAS name for the chemical. Tier II and Tier III IMAP Assessments are available from spreadsheets that can be sorted by tranche, CAS#, CAS name, Australian use, assessment outcome, or IMAP stage.

B14.4. Breadth and Depth of EHS Information Available

There is only limited information available from a search of AICS as follows:

- CAS#
- CAS Name — preferred chemical name
- Associated Names — common or other names that the chemical is known by (note this information is not displayed for all chemicals on AICS).
- Molecular Formula — identifies each type of element by its chemical symbol and identifies the number of atoms of each element found in one discrete molecule of the substance.
- If Secondary Notification Conditions Apply — if YES, companies must contact NICNAS before they manufacture or import this chemical into Australia to find out if they have additional notification requirements. A secondary notification means a chemical may need to be reassessed if the circumstances under which it was originally assessed has changed including where:
 - A significant change of use or new use occurs
 - A significant increase in production occurs
 - New information arises on the hazardous properties of a chemical.
- Conditions of Use — Upon opening the AICS listing - if there is a condition of use it will be described. A condition of use means the chemical can only be used for a specific purpose. If a company's intended use for the chemical is different to the condition of use, it will need to be assessed as a new chemical before import or manufacture by us unless the chemical falls into an exemption category.

To conduct its risk assessments NICNAS reviews information and data provided by the industrial chemicals industry, as well as information from other regulatory bodies both in Australia and overseas. NICNAS does not perform laboratory testing. NICNAS' findings are published in a range of detailed scientific reports. They also provide simplified versions of some reports for chemicals of concern to the community.

NICNAS assesses chemicals that have been newly introduced to Australia, and they are continuing to produce reports on existing chemicals that are listed on AICS.

PEC Assessments — there is substantial EHS information available from these documents, including:

- Chemical identity
- Physical and chemical properties
- Manufacture, import and use
- Public exposure
- Human health hazard characterization
- Human health risk characterization
- Public health risk management
- References

Tier I IMAP Human Health and Environment Assessments — there is limited EHS information available from these assessments — principally the regulatory decision that they do not pose an unreasonable risk to human health or the environment.

Tier II IMAP Human Health and Environment Assessments — there is considerably more EHS information available from these assessments which are organized into the following sections:

- Preface

- Chemical Identity
- Import, Manufacture and Use
- Restrictions
- Existing Work Health and Safety Controls
- Health Hazard Information
- Risk Characterization
- NICNAS Recommendation
- References

Tier III IMAP Human Health Assessments — there is even more EHS information available from these assessments which are organized into the following sections:

- Preface
- Synopsis
- Rationale for Tier III Assessment
- Chemical Identity
- Import, Manufacture and Use
- Public Exposure
- Health Hazard Information
- Public Risk Characterization
- NICNAS Recommendation
- References

B14.5. Quality of the Underlying EHS Information

NICNAS has published a document that outlines how it conducts its IMAP Assessments. It can be downloaded from the following website <https://www.nicnas.gov.au/chemical-information/imap-assessments>. In brief, IMAP Assessments have the following characteristics:

Scientifically robust risk-based approach — the framework uses simple and transparent criteria to determine the potential exposure and risks from chemicals to human health and the environment. The framework also allows for expert judgement, such as peer review to be applied where appropriate.

Achieving assessment outcomes early in the framework — this approach considers advice and requests from stakeholders, including industry and the community, to produce assessment outcomes early in the program and for each tier. The effort and resources being used should match the potential risk of the chemical. At each successive tier, the comprehensiveness (and hence resource intensiveness) of the assessments increases, while the number of chemicals requiring assessment decreases.

Using overseas data — a number of other countries and international agencies are generating or gathering information about the human health and environmental effects of a broad range of chemicals. To ensure efficiency and reduce duplication of effort, NICNAS is using this information (where appropriate) in the Australian context. To maximize this information, the framework's human health and environmental scientific criteria are aligned with existing hazard classification frameworks already in use across industry and internationally.

Advancements in assessment methodologies — to ensure best practice in assessing chemicals in Australia, internationally recognized assessment tools are used to fill gaps in data on a number of

human health and environmental hazard indicators. Tools and approaches being used are QSAR models or computational models for predicting toxicity and data from suitable analogue (similar) chemicals.

A flexible approach to exposure information (actual, surrogate or default). The greatest challenge when assessing the risks of chemicals on AICS is limited information on identity, volume and usage on chemicals currently being imported and/or manufactured in Australia. The framework uses surrogate information to estimate exposure, such as from overseas sources, or conservative default values (where actual or surrogate information is not available) in the early stages (Tier I and Tier II assessments).

B14.6. Procedures for Updating the Database with New Information

Companies that manufacture or import chemicals in Australia have an obligation to notify new chemicals, and to make a secondary notification if the circumstances under which it was originally assessed has changed including where: a significant change of use or new use occurs; a significant increase in production occurs; or if new information arises on the hazardous properties of a chemical.

NICNAS conducts secondary notification assessments of chemicals previously assessed and targeted assessments (focused on hazard, exposure or use) of existing chemicals for which there were potential health or environmental concerns or relevant new data.

B15. New Zealand Government EHS Databases

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the New Zealand government.

For more detailed information about how New Zealand manages hazardous chemicals visit their website.

B15.1. Overview/Description

New Zealand's Environmental Protection Authority (NZEPA) and WorkSafe New Zealand have complementary roles to play to manage risks from exposures to hazardous substances. Hazardous substances are any chemical, or mixture of chemicals, that meets New Zealand's hazardous classification criteria. These criteria include: explosiveness, flammability, toxicity to people, ability to cause cancer, toxicity to the environment and their ability to generate a different hazardous substance on contact with air or water.

Hazardous substances—including petrol, solvents, explosives, industrial chemicals, fireworks, agri-chemicals, household cleaners and cosmetics—need to be approved before they can be used in New Zealand. The role of the NZEPA is to regulate pesticides, household chemicals and other dangerous goods and substances under the Hazardous Substances and New Organisms Act (HSNO). NZEPA makes decisions on whether to approve new hazardous substances. They put rules in place called controls to manage the risks of hazardous substances and to safeguard people and the environment.

NZEPA also reassess substances and makes new decisions about whether the controls need to be updated, and even if they need to be banned. NZEPA also administers hazardous waste and ozone-depleting substances.

Under HSNO, a hazardous substance is any substance that has one or more of the following properties above specified levels:

- an explosive nature (including fireworks)
- flammability
- ability to oxidize (i.e. accelerate a fire)
- corrosiveness
- acute or chronic toxicity (toxic to humans)
- ecotoxicity, with or without bioaccumulation (i.e. can kill living things either directly or by building up in the environment)
- can generate a hazardous substance on contact with air or water.

Hazardous substances can have more than one hazardous property. For example, methylated spirits and petrol are flammable and toxic.

New Zealand groups substances into physical, health and environmental hazards, and assigns a classification number to each type of hazard. If the substance has any hazardous properties, then it is a hazardous substance under the law. If it doesn't have any hazardous properties, then the substance can be considered non-hazardous and companies seeking to manufacture, import or use it don't need to worry about approval.

Companies wishing to import or manufacture a substance must determine whether it is hazardous. When a hazardous substance is approved (either under a group standard or individually), controls (or rules) are put in place for their use, so that the risks are managed. Examples of controls include:

- Hazardous substances must be appropriately packaged.
- Hazardous substances must be used in such a way to minimize environmental effects.
- Sites storing large quantities of liquid hazardous substances not in a workplace must have signage and secondary containment (bunding) in place.
- Labelling and other information must clearly indicate the hazards of the substances.

Each substance has a basic set of controls, known as default controls, depending on the hazard classification of the substance. Similar controls can also be found in group standards to manage the risk of the particular type of group standards. When a substance is approved, these default controls are often modified to make sure they are appropriate for the particular substance being approved. Additional controls may be assigned to them or deleted.

Any site containing large quantities of eco-toxic (class 9) hazardous substances needs appropriate emergency management. Emergency management involves preventing accidents and incidents as well as limiting the adverse effects of incidents, should they occur.

Requirements for emergency management are split between WorkSafe New Zealand (if a toxic substance - class 6 - and in workplaces) and the NZEPA (if exotoxic - class 9 - and not in workplaces).

Emergency management requirements include:

- Emergency information on labels, such as first instructions
- Emergency information on safety data sheets, such as spill response procedures

- Equipment, such as fire-extinguishers
- Signage
- Secondary containment (bundling)
- Emergency response plans.

The level of emergency management required depends on the quantity and type of hazardous substances at the location. Where a substance has more than one hazard classification, the lowest threshold quantity is used.

Threshold quantities are based on the aggregated quantity of all hazardous substances held at that location for:

- Fire extinguishers
- Emergency response plans
- Secondary containment
- Signage requirements

The supplier of the hazardous substance is responsible for providing labelling and safety data sheets and ensuring they meet the required performance standards. The person in charge is responsible for ensuring emergency management procedures are in place, wherever threshold quantities are exceeded, including:

- Labelling requirements continue to be met
- Safety data sheets are available
- The right number and type of fire extinguishers are present and correctly located
- Emergency response plan has been prepared, tested and is available to staff
- The site has appropriate signage
- The site has appropriate secondary containment.

An emergency response plan is needed for sites where large quantities of hazardous substances are present. The plan describes the emergency procedures for the site and must cover all hazardous substances held, or likely to be held, at the site. The plan must be tested at least every 12 months or within three months of a change to the plan. The plan can be part of emergency planning documentation required under other legislation

WorkSafe New Zealand administer the rules for the use of hazardous substances in the workplace.

During the application process, NZEPA works collaboratively with WorkSafe NZ and advises them about the risk assessment for the hazardous substance. From the risk assessment, WorkSafe checks to see if the requirements in the regulations will manage the risks to people in workplaces sufficiently. In some situations, WorkSafe New Zealand may decide that additional requirements are needed to protect workers and other people from the potential harm from a substance. In this case, they may advise the NZEPA that a Safe Work Instrument (SWI) should be developed to address the work-related human health risks identified. An SWI may modify or set some additional requirements to those provided in the regulations. If an SWI is required, WorkSafe will need time to develop one and to obtain the Minister's agreement before the substance can be approved.

Tracking of hazardous substances in workplaces is now administrated by WorkSafe New Zealand, however if a person supplies a substance that triggers a certain threshold, they are required to retain a written record.

Polychlorinated Biphenyls (PCBs) are one of a number of persistent organic pollutants (POPs) which are serious environmental pollutants and are banned in New Zealand. However, it is likely that small amounts of PCBs, as with other POPs, will continue to be found and there is a framework to manage their storage and disposal.

Companies wishing to manufacture or import substances into New Zealand must:

1. Provide the NZEPA with their business contact information
2. Know the ingredients of their product and if they are hazardous
3. Get a current safety data sheet
4. Label their hazardous substances correctly
5. Package their product properly

NZEPA maintains several on-line, searchable databases. Among the databases are the following:

The HSNO Application Register — Search for every hazardous substance and new organism application decided under Part 5 of the HSNO Act.

Chemical Classification and Information Database (CCID) — Search the CCID to find detailed hazard and physical information about single chemicals for use in hazard classifications and safety information.

New Zealand Inventory of Chemicals (NZIoC) — Search for single chemicals here to see if they can be used in products assigned to Group Standards.

Group standards are approvals for a group of hazardous substances of a similar nature, type or use. Manufacturers and importers carry out their own assessment and assign their product to certain group standards based on the hazards and intended uses of the products. Once a group standard has been found, they need to keep a record why a particular group standard has been assigned.

There are a range of offenses and penalties under HSNO and various other New Zealand regulations. Penalties are dependent on the nature of the offense, and the duty holder of the offender, but can include infringement notices, infringement fees and/or court-imposed orders. Furthermore, court imposed orders may include orders for restoration (put right the offense), adverse publicity (publicly acknowledge the offense), injunctions (stop the offense) and training orders. Maximum penalties range between NZD 5000 (for an individual) and NZD 500 000 (for a company). Prison sentences are reserved for very serious offenses, including reckless conduct without 'reasonable' excuse.

B15.2. Scope of Chemicals Addressed

In Scope

The NZIoC is a database of all the hazardous chemical components of products, including pesticides, polymers, and non-infectious organisms that have been approved under group standards. Note that non-hazardous chemicals are not required to be listed, although not all substances listed in the NZIoC are classified as hazardous. There are approximately 28,000 chemicals listed in the NZIoC database.

Note that the term "hazardous substances" under HSNO is unique in the world. It covers both single-component chemical substances and formulated products. New Zealand's chemical approval system is also quite different from other countries. A new single-component chemical substance that is not hazardous does not require approval.

Out of Scope

Some hazardous substances are exempt or excluded from the HSNO. An approval is not needed to import or manufacture these substances.

Exempt substances include:

- Hazardous substances for use in an exempt laboratory
- Radioactive material
- Medicine intended for people
- Food
- Infectious substances
- Manufactured articles
- Non-hazardous substances

B15.3. Ease of Access and Use of Chemical Information

Each of the three New Zealand databases — HSNO Application Register, CCID, and NZIoC can be searched by CAS# or chemical name. No guidance document could be located to assist with searches.

B15.4. Breadth and Depth of EHS Information Available

The amount of EHS information available varies among the three databases as follows:

HSNO Application Register — presents the results of the determination of whether the substance meets the definition of hazardous and a very brief basis for that determination.

CCID — presents the results of the determination of whether the substances meets the definition of a hazardous substance and includes a more substantial discussion of the scientific evidence available that supports that determination, including references to specific research studies and findings.

NZIoC —presents no EHS information, simply the CAS#, Name, Synonyms, Approval Status, Restrictions and Date of Approval.

B15.5. Quality of the Underlying EHS Information

NZEPA draws on world-class expertise and information on chemicals from local and international science communities and similar government environmental agencies around the world. NZEPA also contributes to the world- wide body of shared knowledge through many international connections. They are committed to science and risk based decision making that is transparent and offers the public the opportunity to participate.

B15.6. Procedures for Updating the Database with New Information

All hazardous substances must be notified to NZEPA prior to their manufacture or import.

Over time, new information about a hazardous substance may emerge which suggests that the risks to human health and/or the environment may not be appropriately managed by the existing controls for the substance.

Similarly, new information may become available on the benefits of a substance. When this happens, the EPA may reassess the approval for the substance.

An amendment makes a change to a hazardous substance approval that is 'minor in effect' or corrects a minor or technical error in the approval.

A reassessment is an assessment of the effects of an approved hazardous substance and the controls that have been imposed on it. This includes reconsideration of the risks, costs and benefits of the substance. If anyone believes the approval for a hazardous substance should be reassessed, the first step is to outline the reasons. This is called 'applying for grounds'. Anyone can apply to have a substance reassessed or an approval amended. Some applications are initiated by the NZEPA Chief Executive.

B16. People's Republic of China Government EHS Databases

The information presented below represents a summary of key information about the environmental, health and safety information on industrial chemicals that is available from the Chinese government. Unfortunately, as of this writing, the Chinese government has made only a relatively small amount of information available in the English language. Two independent contractor sources relied upon for compiling the information are [ChemSafetyPro](#) and [CIRS](#).

B16.1. Overview/Description

In March of 2011, the State Council of China published its Regulations on Safe Management of Hazardous Chemicals (China Decree 591) and it entered into force on 1 Dec 2011. Decree 591 is the highest chemical control law in China and it regulates hazardous chemicals through the entire supply chain, from manufacture, importation, distribution, storage to transportation and use.

Decree 591 is not a single law. It is supported by dozens of ministerial regulations (including China MEP order 7, i.e., China REACH) and numerous guidance documents. Three main ministries involved are the Ministry of Ecology and Environment (MEE), the State Administration of Work Safety (SAWS) and the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ).

Decree 591 requires businesses which handle hazardous chemicals to apply for licenses to operate ("license system") and submit HazChem registrations separately to two ministries (MEE and SAWS). Decree 591 also implements GHS in China requiring companies to provide SDSs and labels prepared in accordance with relevant national standards.

In Decree 591, hazardous chemicals are defined as highly toxic chemicals and other chemicals which are toxic, corrosive, explosive, flammable and do harm to human body, facilities and environment. All chemicals meeting GHS hazard classification criteria may fall within its scope.

In Jan 2013, China MEE published the updated version of the Inventory of Existing Chemical Substances in China (IECSC). It is only available from them in Chinese, but may be downloaded from this website
Some consultants will make an English language version of IECSC available if contacted directly.

As of the beginning of 2013, there were 45,612 substances in IECSC. No CAS# were available for 8,486 of them. Any substance that is not listed on IECSC is regarded as a new substance in China and requires notification in accordance with China MEP Order 7 (China REACH).

Among all hazardous chemicals placed on the Chinese market, more than 2800 chemicals have been added to the Catalogue of Hazardous Chemicals. This Catalogue is for administrative licensing purposes. Businesses who handle hazardous chemicals listed in the Catalogue are subject to various license requirements.

Some hazardous chemicals in the Catalogue belong to highly toxic chemicals, explosives precursors and priority hazardous chemicals for environmental management and are subject to more stringent requirements.

- Catalogue of Hazardous Chemicals (2015);
- Highly Toxic Chemicals Management;
- Explosives Precursors Management;
- Priority Hazardous Chemicals for Environmental Management;

Any legal entity producing, importing, distributing or using hazardous chemicals in the Catalogue of Hazardous Chemicals in China must obtain a license from local Administration of Work Safety. There are three main types of licenses:

- Production license for producers;
- Operation license for importers, distributors, sellers, etc.;
- Safe use license for certain downstream users(*)

*A safe use license is only required if the volume of certain hazardous chemicals used exceeds certain amounts and the industry sector of the user is on the list of applicable industry sectors.

Articles 66 and 67 of Decree 591 require domestic manufacturers and importers of hazardous chemicals to register hazardous chemicals with the National Registration Center of Chemicals (NRCC) of SAWS prior to manufacturing or importation. Detailed registration requirements and procedures are outlined in SAWS's order 53 - The Measures for the Administration of Registration of Hazardous Chemicals.

This HazChem registration is required for both hazardous substances and mixtures regardless of whether they are included in the Catalogue or not. There is no small volume exemption either.

China MEE order 22 was revoked on 15 July 2016. Companies no longer need to register hazardous chemicals with environmental protection authorities.

Decree 591 is the most important law implementing GHS in China. Article 15 requires chemical manufacturers to provide Safety Data Sheets and labels prepared in accordance with the relevant national standards. Article 37 prohibits distributors from selling hazardous chemicals without SDSs or labels. Companies who fail to classify, label and package hazardous chemicals in accordance with those standards would face a maximum penalty of 50,000 Yuan or a ban.

In addition, Decree 591 gives power to AQSIQ to conduct inspections on imported and exported hazardous chemicals and their packages at ports. SDSs and labels are the main things they inspect. Non-compliant SDSs and labels may result in a delay of customs clearance or returned goods.

SAWS issued its revised Catalogue of Hazardous Chemicals in March of 2015. This Catalogue includes 2,828 entries covering more than 2,800 hazardous substances and some mixtures. The Catalogue came into force on 1 May 2015. In Sept 2015, SAWS issued a guidance document containing official GHS classifications for chemicals in the Catalogue. At present, only a Chinese language version of the Catalogue is available from SAWS, although some consulting organizations offer an English language version if contacted directly.

The Catalogue is for administrative licensing purposes and does not represent a complete list of hazardous chemicals in China. For example, chemicals classified with acute toxicity GHS category 4 do not meet criteria for inclusion in the Catalogue. However, they are still hazardous and subject to mandatory SDSs and labelling requirements under Decree 591.

The Catalogue includes mostly substances. Only a few mixtures are included.

A substance refers to an industrial product as it is produced. There is no minimum concentration set for a product to meet the definition of a substance.

The Catalogue is also a compulsory GHS classification list in China. For chemicals listed in the Catalogue, industry must use the published classifications or more severe ones to classify their chemicals and prepare safety data sheets.

HazChem registration is not limited to those hazardous chemicals listed in the Catalogue. Under SAWS's order 53, manufacturers and importers of hazardous chemicals must register such chemicals with the NRCC of SAWS prior to production and importation.

Not every hazardous chemical in the Catalogue is treated the same. Hazardous chemicals which are indicated as "Highly Toxic" in the Catalogue and explosives precursors are subject to additional license and reporting requirements on storage, sales and purchase under the State Council Decree 591. The Catalogue also includes some chemical weapons precursors and drug precursor chemicals which are subject to additional control by other regulations.

Highly toxic chemicals are defined as chemicals with high acute toxicity (usually GHS Acute Toxicity Category 1). Those chemicals can be lethal even in very small quantities. In China, highly toxic chemicals are mainly regulated by the following administrative regulations:

- Regulations on Safe Management of Hazardous Chemicals (2011) – State Council Decree 591;
- Catalogue of Hazardous Chemicals (2015);
- The Measures for the Administration of Licenses for the Purchase and Road Transportation of Highly Toxic Chemicals in China (2005) – Order 77 of the Ministry of Public Security (MPS).

The above regulations establish a much tighter regulatory regime for highly toxic chemicals than regular hazardous chemicals in China and set additional requirements on the storage, purchase and sales of highly toxic chemicals.

At one time MPS maintained a separate List of Highly Toxic Chemicals. This list has recently been incorporated into the Catalogue of Hazardous Chemicals (2015).

There are currently 148 highly toxic chemicals in the Catalogue of Hazardous Chemicals (2015). The Catalogue may be searched by Chinese name or CAS#.

Unlike China MEP order 7 which focuses on the registration of new substances, SAWS's order 53 focuses on chemical products which include both substances and mixtures. A product requires registration if:

- It is listed in the Catalogue of Hazardous Chemicals; or;
- It is not listed but identified as hazardous based on available data.

For a chemical product with unknown hazards (a chemical outside of the Catalogue), hazard identification needs to be conducted by qualified institutes as required by SAWS's order 60 for physico-chemical identification and classification. If the product is identified as hazardous, registration will be required.

All chemicals meeting GHS hazard classification (excluding certain hazard categories such as acute toxicity 5) will require registrations regardless of the volume produced or imported.

The following information for each hazardous product needs to be submitted online to the local HazChem registration office which conducts preliminary review and passes complete registration materials to the NRCC of SAWS based in Qingdao City of Shandong Province.

- Legal entity information;
- Classification and labeling(China GHS);
- Physical-chemical properties;
- Main uses;
- Hazard properties;
- Safety requirement for storage, use and transport;
- Emergency responses (24h emergency contact number required);
- Chinese GHS SDS and labels required.

The registration certificate is valid for 3 years and can be renewed 3 months prior to certificate's expiry date.

China REACH was issued in Jan 2010 and came into force on 15 Oct 2010. This regulation is similar in many respects to EU REACH. China REACH requires that manufacturers and importers submit new substance notifications and obtain approvals from the Solid Waste and Chemical Management Center (SCC) prior to production or importation. A foreign exporter may appoint a local Chinese agent (Only Representative) to submit new substance notifications.

The notification requirement not only applies to the new substance on its own, in preparation or articles intended to be released, but also applies to new substances used as ingredients or intermediates for pharmaceuticals, pesticides, cosmetics, food additives and feed additives, etc.

There are four types of notifications under China REACH which depend on the use and volume of a new substance. In general, with the exception of polymers of low concern which require only a simplified notification; substances produced or imported at or above 1 ton/year require regular notification. For lower volume substances the following applies: (1) scientific research or testing purposes only, scientific research record, simplified notification; (2) isolated intermediate, special conditions, simplified notification; (3) polymer of low concern, general conditions; and (4) regular new substance, regular notification.

For simplified notification under general conditions and regular notification, some eco-toxicology studies must be done locally in MEP-approved labs.

IECSC is not a static inventory. Generally, new substances will be added into IECSC only after 5 years since the date of the first commencement of manufacturing or importation. Whether hazardous new chemicals substances will be added onto IECSC depends on the review of a technical committee. New substances that have gone through simplified notification or scientific research record are not added into IECSC.

Upon obtaining a China REACH registration certificate, companies must fulfill post-notification obligations based on the category of management stated on the certificate. New substances are categorized as general new chemical substances or hazardous new chemical substances based on their hazard properties. Hazardous new chemical substances that are classified as persistent and bioaccumulative or are classified as harmful to ecological environment and human health will be further designated as priority hazardous new chemical substances for environmental management and are then subject to additional post-notification requirements.

There are some substantial differences between China REACH and EU REACH as follows:

China and EU REACH		
Characteristic	China REACH	EU REACH
Scope	All new substances regardless of volume produced or imported	New and existing substances produced or imported $\geq$ 1/tonne/year
Polymers	Notification of polymers	Polymers are largely exempt
Ecotoxicology Studies	Must be performed by local Chinese laboratories	No restriction on where testing is performed
Risk Assessments	Must be done on all substances $\geq$ 1 ton/year	Must be done on all substances $\geq$ 10 tonne/year
QSAR	Supporting information only	Accepted in lieu of some testing
Joint Submission	Optional	Mandatory
SVHC List	Not applicable yet	Yes
Articles	Out of scope	In scope

There is no China SVHC list yet. However, there is a Chinese version of REACH restricted substances list.

B16.2. Scope of Chemicals Addressed

IECSC and China REACH capture all chemicals on the Chinese market, including polymers, regardless of the volume they are produced or imported.

The following substances are exempt from China REACH.

- Chemical substances subject to other existing laws and regulations (pharmaceuticals, pesticides, cosmetics, food additives, etc.);
- Naturally occurring substances;
- Impurities (content of a single impurity $<10\%w/w$, total content of all impurities $<20\%w/w$), waste or by-products;
- Special categories such as glass, cement, alloys, non-isolated intermediates (*), articles.

*On-site isolated intermediate is regarded as non-isolated intermediate in China and thus exempt.

B16.3. Ease of Access and Use of Chemical Information

A major impediment to using IECSC and the Catalogue of Hazardous Chemicals is that they are not generally available in English. Both may be downloaded and searched by Chinese chemical name or CAS#. No English language help is available for conducting the searches.

B16.4. Breadth and Depth of EHS Information Available

There is no English language EHS information available from either IECSC or the Catalogue of Hazardous Chemicals.

B16.5. Quality of the Underlying EHS Information

Not applicable.

B16.6. Procedures for Updating the Database with New Information

IECSC is updated with new chemicals only 5 years after the commencement of manufacture or import. Moreover, the availability of publicly accessible updated IECSC or Catalogue of Hazardous Chemicals is at the discretion of MEE and SAWS, respectively.

B17. Asean-Japan Chemical Safety Database (AJCSD)

The information presented below represents a summary of key information available from the Asean-Japan Chemical Safety Database (AJCSD). More detailed information about AJCSD may be found at their website.

B17.1. Overview/Description

The AJCSD is a free, public online database that provides users with regulatory information on a hundred thousand chemicals in ASEAN and Japan. Participating member countries include: Brunei, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. The AJCSD contains regulatory information on chemical substances provided directly by the governments of ASEAN countries, hazard and risk information from Japan, GHS Classification results from Japan, Malaysia and Myanmar, and sample SDSs in local language(s). Japan's NITE is the operator of the AJCSD which began operations in April of 2016. NITE sees the database as a way of promoting gradual harmonization in the region. They emphasize that the database is for reference only, and should not be used as a substitute for regulatory requirements.

B17.2. Scope of Chemicals Addressed

The focus is on industrial chemicals; however, this is not further described and users should examine the scope of chemicals addressed by each of the countries that is participating in the AJCSD for clarification.

B17.3. Ease of Access and Use of Chemical Information

AJCSD is publicly accessible and is free of charge to use. There is an English language user's manual available to assist with searches.

There are three ways to search at the AJCSD, Search (Multilingual*), Advanced Search (English only), and Substance Lists (English only). Users can search by CAS# or chemical name in English. Advanced

searches may be conducted with multiple keywords, each separated by a space. They may also be conducted by molecular formula.

*Burmese, English, Indonesian, Japanese, Khmer, Lao, Malay, Standard Thai or Vietnamese.

B17.4. Breadth and Depth of EHS Information Available

Searches of AJCSD can yield the following information:

- Names, CAS#, and structural formulae for chemical substances;
- Sample safety data sheets (SDSs);
- GHS classification results from Japan, Malaysia and Myanmar; and
- hazardous and risk assessment results from Japan.

How each participating country regulates a particular substance or group of substances can also be searched for comparison purposes.

B17.5. Quality of Underlying EHS Information

The AJCSD provides reliable data published by international authorities. However, NITE notes that Information or data is provided on an “as is” and “as available” basis. The operator and the participating countries make every effort to ensure, but do not guarantee, the accuracy or completeness of the information or data. Since the hazard and risk information derives from the Japan CHRIP database, users have assurance that this information has been compiled by experts and has undergone peer-review.

B17.6. Procedures for Updating the Database with New Information

The AJCSD contains information for a lot of substances. The quality of the database is ensured by regular updates performed once every two months, and by a continual verification process.

B18. US National Library of Medicine TOXNET Database

Presented below is a summary of EHS information on industrial chemicals that is available from US National Library of Medicine TOXNET Database. For more detailed information, the reader should consult directly with their website. The reader should also be aware that several of the most important data sources contributing information to the TOXNET database (e.g., USEPA IRIS, etc.) are reviewed in greater detail in other sections of this report.

B18.1. Overview/Description

TOXNET® (TOXicology Data NETwork) is a group of databases covering chemicals and drugs, diseases and the environment, environmental health, occupational safety and health, poisoning, risk assessment and regulations, and toxicology. It is managed by the Toxicology and Environmental Health Information Program in the Division of Specialized Information Services of the National Library of Medicine.

TOXNET may be used to find:

- Specific chemicals, mixtures, and products
- Chemical nomenclature
- Chemicals that may be associated with a disease, condition or symptom
- Chemicals associated with consumer products, occupations, hobbies, and more
- Special toxic effects of chemicals in humans and/or animals
- Citations from the scientific literature

TOXNET provides links to PubMed®, NLM's free web interface to the world's biomedical literature, and to additional sources of toxicological information.

Specific databases that can be searched through TOXNET include:

B18.1.1. Chemical Nomenclature and Structure

ChemIDplus®

ChemIDplus contains over 400,000 chemical records. More than 300,000 of those records include chemical structures. ChemIDplus is searchable by Name, Synonym, CAS Registry Number, Molecular Formula, Classification Code, Locator Code, Structure, and/or Physical properties. Enhanced structure display is available in ChemIDplus Advanced.

B18.1.2. Toxicology Data

Toxicological information may be found in the following databases:

CCRIS (Chemical Carcinogenesis Research Information System)

CCRIS is developed and maintained by the National Cancer Institute (NCI). It contains over 9,000 chemical records with carcinogenicity, mutagenicity, tumor promotion, and tumor inhibition test results. Data are derived from studies cited in primary journals, current awareness tools, NCI reports, and other special sources. Test results have been reviewed by experts in carcinogenesis and mutagenesis.

CCRIS provides historical information from the years 1985 - 2011. It is no longer updated.

CPDB (Carcinogenic Potency Database)

CPDB provides standardized analyses of the results of 6540 chronic, long-term animal cancer tests conducted since the 1950s and reported in the general published literature or by the National Cancer Institute and the National Toxicology Program. This database was developed at the University of California, Berkeley, and Lawrence Berkeley Laboratory.

CPDB provides historical information from the years 1980 - 2011. It is no longer updated.

CTD (Comparative Toxicogenomics Database)

CTD contains manually curated data describing cross-species chemical-gene/protein interactions and chemical- and gene-disease relationships. The results provide insight into the molecular mechanisms underlying variable susceptibility and environmentally influenced diseases. These data will also provide insights into complex chemical-gene and protein interaction networks. CTD is developed with funding from the National Institutes of Environmental Health Sciences (NIEHS) at North Carolina State University (NCSU). The database is updated several times a year.

GENE-TOX (Genetic Toxicology)

GENE-TOX was created by the U.S. Environmental Protection Agency (EPA) and has genetic toxicology test results on over 3,200 chemicals. Selected literature was reviewed by scientific experts for each of the test systems under evaluation.

GENE-TOX provides historical information from the years 1991-1998. It is no longer updated.

HSDB® (Hazardous Substances Data Bank)

HSDB provides toxicity data for over 5,800 potentially hazardous chemicals. It also has information on emergency handling procedures, industrial hygiene, environmental fate, human exposure, detection methods, and regulatory requirements. The data are fully referenced and reviewed by a Scientific Review Panel.

Haz-Map®

Haz-Map is an occupational health database designed for health and safety professionals and for consumers seeking information about the health effects of exposure to chemicals and biological agents. The database is a "map" of workplace hazards to help you prevent occupational diseases. Haz-Map links jobs, hazardous tasks with occupational diseases and their symptoms, and other non-occupational diseases such as hobbies.

Household Products Database

The Household Products Database has information on the potential health effects of chemicals contained in common products used inside and around the home. Information is also available for some industrial grade products. Products can be searched by brand name, product type, manufacturer, ingredient/chemical name, and by health effects. The record for each product shows the ingredients as reported by the manufacturer. For many products, a link to the manufacturer's Safety Data Sheet (formerly Material Safety Data Sheet) is provided which includes more information such as handling, disposal, and health effects.

IRIS (Integrated Risk Information System)

IRIS, developed by the U.S. Environmental Protection Agency (EPA), is a human health assessment program that evaluates information on health effects (cancer and non-cancer) that may result from exposure to environmental contaminants, and which is subsequently compiled into a database. Reviewed by EPA scientists and representing EPA consensus, IRIS covers over 550 chemicals.

ITER (International Toxicity Estimates for Risk)

ITER provides health risk values and cancer classifications from authoritative groups worldwide for chemicals of environmental concern. It presents risk data in a tabular format for easy comparison between organizations, and includes synopses explaining data variations where they exist. ITER also has links to source documentation and more details. It is compiled by Toxicology Excellence for Risk Assessment (TERA).

LactMed® (Drugs and Lactation)

LactMed is a database of over 1,000 drugs and other chemicals to which breastfeeding mothers may be exposed. It includes information on the levels of such substances in breast milk and infant blood, and the possible adverse effects in the nursing infant. Suggested therapeutic alternatives to those drugs are provided, where appropriate. All data are derived from the scientific literature and fully referenced.

Data are organized into substance-specific records, which provide a summary of the pertinent reported information and include links to other NLM databases. Supplemental links to breastfeeding resources from credible organizations are also provided. LactMed is updated monthly.

TRI (Toxics Release Inventory)

TRI is a set of publicly available databases containing information on releases of specific toxic chemicals and their management as waste, as reported annually to the EPA by U.S. industrial and federal facilities. This inventory was established under the Emergency Planning and Community Right to Know Act of 1986 (EPCRA). TRI's data, beginning with the 1987 reporting year, covers air, water, land, and underground injection releases, as well as transfers to waste sites. In agreement with the Pollution Prevention Act of 1990, source reduction and recycling data is also included in TRI.

TOXMAP®

TOXMAP is a Geographic Information System (GIS) using maps of the United States to show the amount and location of toxic chemicals released into the environment. Data is derived from the EPA's Toxics Release Inventory (TRI), which provides information on the releases of toxic chemicals into the environment as reported annually by industrial facilities around the United States. TOXMAP also contains information from the EPA's Superfund Program.

B18.1.3. Toxicology Literature

TOXLINE®

TOXLINE provides bibliographic information (1840s to present) covering the biochemical, pharmacological, physiological, and toxicological effects of drugs and other chemicals. It contains over 5 million references, most with abstracts, indexing terms, and Chemical Abstracts Service (CAS) Registry Numbers. The toxicology subset of MEDLINE®/PubMed is part of TOXLINE. TOXLINE also contains references from specialized journals, government reports, meeting abstracts, and other relevant collections of toxicology literature.

DART® (Developmental and Reproductive Toxicology Database)

DART contains references to reproductive and developmental toxicology literature. DART is created from a search profile run against PubMed. DART previously contained additional citations from various sources that no longer exist, and from journals which are now indexed by Medline.

B18.2. Scope of Chemicals Addressed

The scope of TOXNET is very broad and includes chemicals in commerce, chemical contaminants found in the environment, biological agents, drugs, pesticides, biocides, diseases, genes and proteins.

B18.3. Ease of Access and Use of Chemical Information

TOXNET is easily accessed and searched. Individual databases may be searched one at a time or multiple databases may be searched simultaneously using single or multiple keywords, chemical name or CAS#. There is an abundance of help with search strategies available.

TOXNET may even be searched from mobile devices. Detailed training and guidance are available for those wishing to search TOXNET by visiting TOXNET and Beyond Training Class Schedule and Workbook for a class schedule and to download the TOXNET manual.

B18.4. Breadth and Depth of EHS Information Available

The breadth and depth of EHS information available from TOXNET varies considerably based on the contributing data source and substance being queried. Generalizing somewhat, extensive EHS data are available for pesticides, biocides, high volume chemicals and those chemicals that have been produced and used for longer durations and have been subject to more intensive government agency scrutiny based on their uses/exposures and suspected hazard properties.

Raw data measuring the properties of chemicals (physical chemical properties, environmental fate and behavior, eco-toxicity, and mammalian toxicology) from a full range of tests and models (e.g., Quantitative Structure Activity Relationships (QSAR), computational toxicology methods, etc.) are available, as well as robust summaries of those data, hazard and exposure characterizations and risk assessments.

A clear advantage of TOXNET is that it can provide the user with rapid access to the full gamut of EHS information that is available on a particular substance from multiple sources.

B18.5. Quality of the Underlying EHS Information

The data and information stored in each participating data source are the responsibility of the data owner. The National Library of Medicine cannot guarantee the correctness of the data, and provides explicit warnings that it cannot be held responsible or liable for errors.

TOXNET does provide brief descriptions of the sources and the peer review the data has undergone for each data source. Most sources have some procedures in place to assure the quality and reliability of the information they rely upon for making chemical safety assessments; however, users of the information should confirm the robustness of those procedures by checking with the relevant sources.

B18.6. Procedures for Updating the Database with New Information

TOXNET databases are updated when new information becomes available. New data is checked for at least once a week. Users can refer to the TOXNET Databases Size Report to see if a specific database has been updated. Users should note that some databases are no longer updated and are maintained as historical resources.

B19. GoodGuide

Presented below is a summary of EHS information on industrial chemicals that is available from GoodGuide. For more detailed information, the reader should consult directly with their website.

B19.1. Overview/Description

GoodGuide was launched approximately 10 years ago. Its stated mission is to provide consumers with the information they need to make better shopping decisions. GoodGuide believes that as more

consumers choose products that contain ingredients with fewer health concerns, retailers and manufacturers face compelling incentives to make and sell better products.

To fulfill their mission, GoodGuide combines manufacturer-provided information about product ingredients with authoritative information on the health effects of chemicals. They rate products so that consumers can have instant access to credible information about products that would be very difficult for anyone to develop on their own. GoodGuide employs a team of scientific experts in product and chemical information and have been engaged in this project for ten years. According to GoodGuide they have grown to become the web's most comprehensive and credible resource for information about the impact of consumer products on human health. More than 1 million consumers use GoodGuide's website and mobile apps every month to help decode product labels, research ingredients, and make more informed decisions about the products they purchase.

With GoodGuide, users can:

- Use their ratings to quickly identify the highest rated products on the market.
- Find out whether a product contains ingredients with health concerns.
- Rely on their science expertise to interpret complex information about the potential health effects of different chemicals.
- Get advice while shopping by using the GoodGuide iOS App, Product Scanner for Android, or the mobile website.

International Users

Though GoodGuide's product ratings currently cover U.S. based products, similar versions of the same product are available in many countries. Persons who live outside of the U.S. can still use the website as thousands of consumers currently do, but will need make sure to compare the ingredient lists for differences.

GoodGuide Ratings

The GoodGuide Rating was developed using methodologies that are grounded in the sciences of informatics and health risk assessment. Products are scored from a low of 0 to a high of 10. The higher the rating, the better the product from a health perspective.

Note that GoodGuide maintains complete control over its rating system — brands do not have any influence over the ratings they assign to their products.

GoodGuide uses “ontologies,” or structural frameworks for organizing information, to define “what matters” when assessing the health performance of a product or company. The major issues covered are summarized in their ratings overview. GoodGuide's issue framework is derived from current standards of practice in the scientific domains relevant to assessing health impacts. For example, they track issues that mirror the standard output of chemical risk assessments or nutritional evaluations. Their reliance on the informatics systems that have been developed by scientific, regulatory or other authorities to address specific issues ensures that their system provides science-based ratings and can take advantage of standardized information generation.

For each issue, GoodGuide identify a set of “indicators” that provide evidence about how a product performs on that issue. Product-level indicators are based on attributes of a product related to its potential health impacts (e.g., the level of health concern about the ingredients of a personal care product).

Data availability is one of the most important criteria for selecting indicators. In order to ensure they have comparable information available for rating products, they require that indicator information is publicly available for the majority of rated products. Data availability influences GoodGuide's rating system in two important ways:

- In many cases, data availability considerations require GoodGuide to rely on “screening-level” indicators rather than “data-intensive” indicators. In a world of perfect information, for example, product health ratings would be based on detailed health risk assessments that combine information about the health hazards of ingredients with data characterizing consumer exposure to those chemicals. Unfortunately, these data are almost never made available by manufacturers, so GoodGuide utilizes more readily ascertainable hazard indicators (e.g., the number of ingredients of health concern in a product).
- Because the pervasive lack of transparency about product attributes undermines the public's ability to evaluate performance, GoodGuide has created a number of indicators that track data availability and product impact ratings. At the product level, Data Adequacy indicators track whether the specific data elements that are needed to assess a product's health impact are public. GoodGuide penalize personal care or household chemical products missing complete ingredient lists in their scoring system because these products lack the data needed to assess chemical safety.

At the product-level, the GoodGuide ratings system is designed to support comparisons of products within a product category (e.g., after shave, body wash and cleansers, candy, etc.). The evaluative framework used to assess personal care products contains a different set of issues and indicators than the framework used to assess food products - the former focuses on characterizing the health impacts of ingredients, while the latter focuses on characterizing the nutritional value of products.

GoodGuide rolls-up indicator scores into issue-specific groups (e.g., human health impacts, ingredient disclosure) to assign ratings. All issues and indicators are not equal. In order to generate a rating that accurately reflects the relative importance of different issues or indicators, they apply weights to issues and utilize different aggregation algorithms.

GoodGuide's rating frameworks define what is known as a “value tree” in multi-attribute utility theory. Each specific set of indicators, sub-issues or major issues are hierarchically organized into “nodes.” For each node, they specify the weights or aggregation algorithm used to compile scores from the constituents of that node.

Aggregation algorithms are used throughout their ratings system to combine sets of scores. Available methods include:

- Maximum (select the highest score in a set). This is generally used in positive nodes that include certification indicators because this value promotes the most positive signal about an issue, without dilution due to inaction or no data on other indicators relevant to the same issue.
- Minimum (select the lowest score in a set). This is generally used in negative nodes that include Hazard or Restriction indicators because this value promotes the most negative signal about an issue, without dilution by positive values on other indicators relevant to the same issue.

- Mean (calculate the average of all scores in a set). This is generally used when aggregating scores from a set of positive and negative sub-nodes in order to allow real world signals (from either quantitative metrics or compliance counts) to influence a score in either a positive or negative direction.
- Preferred (select score from top available indicator in a rank ordered set of indicators). This is used in nodes where data sources or indicators have been rank ordered based on quality or relevance to an issue. It promotes the score from the best available source or indicator.
- Matrix (apply a custom calculation to a set of indicators). This is used in product-level ratings when a set of indicators have to be combined using domain-specific rules to correctly characterize an issue. Prominent examples include the scoring rules applied to rate food products on their nutritional value; personal care products on their potential human health impact; and attribution of extra credit for product performance.

Value judgments are unavoidable in rating systems, and GoodGuide's is no exception. Even the most scientifically grounded assessment requires value judgments about the relative importance of various issues and types of evidence, as well as the treatment of data gaps. GoodGuide acknowledge that users can disagree over the relative weight given to different health hazards as there is no objective, correct solution to the problem of how to aggregate such disparate concerns.

More detail is provided below for the methodology GoodGuide uses to score Personal Care and Household Chemical Products.

GoodGuide counts the number of ingredients in each product that are categorized as low, medium or high health concern. They then factor in other negative information (such as regulatory restrictions) and any available positive information (such as third-party certifications) to assign product ratings.

To rate a personal care or household chemical product, GoodGuide considers the following attributes:

- A health hazard rating based on the number of product ingredients categorized as low, medium or high health concern;
- Indicators that the product exhibits other negative aspects (e.g., does the product contain ingredients that have been banned or subjected to regulatory restrictions);
- Indicators that the product is among the best on the market in its category (e.g., has the product been certified as safe or healthy by a credible third-party);
- Indicators of data gaps that preclude evaluation of the product (e.g., no or inadequate disclosure of product ingredients).

In order to identify ingredients of health concern, GoodGuide utilize the science of health hazard assessment and rely on lists of chemicals labeled hazardous by various authoritative organizations. GoodGuide tracks whether chemicals are recognized or suspected of causing any of twelve major types of human health problems, ranging from cancer to endocrine toxicity to skin or eye toxicity. They combine this hazard data with chemical potency, human detection frequency and toxicity testing information, in order to assign ingredients to four levels of health concern: none, low, medium and high.

An ingredient raises no health concern if:

- It is not on any of GoodGuide's lists of toxic chemicals which cause suspected or recognized health effects;

- It has not been detected in human tissue or urine; It is not a high production volume chemical that lacks safety data.
- An ingredient raises a low level of health concern if:
- It exhibits two or less suspected health effects; and/or
- It has a relatively low toxic potency for inhalation and ingestion exposures; and/or
- It is only occasionally detected in human tissue or urine; and/or
- It lacks at least half of the six basic toxicity tests required to assess chemical safety.

An ingredient raises a medium level of health concern if:

- It exhibits three or more suspected health effects; and/or
- It has a relatively moderate toxic potency for inhalation and ingestion exposures; and/or
- It is regularly detected in human tissue or urine.

An ingredient raises a high level of health concern if:

- It exhibits one or more recognized health effects; and/or
- It has a relatively high toxic potency for inhalation and ingestion exposures; and/or
- It is frequently detected in human tissue or urine.

Chemicals are identified as recognized toxicants based on hazard identification efforts of authoritative national and international scientific and regulatory agencies.

To date, such efforts have been focused on only a few types of toxicity. GoodGuide utilizes California's Proposition 65 lists of chemicals in order to identify recognized carcinogens, reproductive toxicants, and developmental toxicants. Chemicals are listed on Proposition 65 following a scientific peer review process and regulatory rule-making, which incorporates the hazard identification efforts of a variety of other authoritative bodies, including the International Agency for Research on Cancer and the National Toxicology Program. Hence, a substantial weight of toxicological or epidemiological evidence supports the decision to list a chemical as a recognized health hazard under Proposition 65. Stakeholders that believe a chemical does not cause a recognized health effect have the opportunity to argue that the evidence does not support identifying the chemical as a hazard. If a chemical is listed under Proposition 65, such arguments failed to convince neutral scientific and regulatory experts. GoodGuide also relies on a peer-reviewed article in the medical journal *Lancet* to identify recognized neurotoxicants.

Chemicals are identified as suspected toxicants based on reports in the scientific or regulatory literature, or on information abstracted from major toxicological databases.

Lists of suspected toxicants are linked to twelve health effects. Suspected toxicants possess evidence that they can cause specific adverse health effects. However, no authoritative hazard identification process is currently conducted by regulatory agencies or scientific organizations for these health effects. It is important to consider a chemical on a "suspected" list as a preliminary indication that the chemical may cause this effect, rather than a definitive finding that it does. In order to identify suspected toxicants, information is abstracted from the principal toxicology text books (such as Casarett and Doull's *Toxicology*), medical journal articles, regulatory actions, and international chemical hazard resources (such as the European Union). The weight of toxicological or epidemiological evidence supporting suspect hazard identification can vary significantly between chemicals. For example, evidence from two different laboratory species indicates that acetonitrile can cause cardiovascular toxicity. In contrast, overwhelming evidence indicates that carbon monoxide causes cardiovascular toxicity in humans. These disparate data lead to designation as a "suspected" toxicant as an

authoritative agency has yet to compile lists of cardiovascular toxicants. Identifications developed by regulatory agencies or scientific references often undergo peer review, but an administrative process that allows for debate over and conclusive resolution to the toxicity designation of a chemical has yet to be put in place.

GoodGuide separates ingredients into two categories — “ingredients of health concern” and “controversial ingredients.” Only the former contribute to a product’s rating.

A chemical must be identified as a potential health hazard by a GoodGuide-approved authoritative source (e.g., a regulatory agency like USEPA or a scientific group like the National Toxicology Program) in order to be labeled an ingredient of concern. This system ensures that our ratings are based on the best available scientific evidence. GoodGuide labels chemicals as “controversial” ingredients if they have not been identified as hazardous by authoritative sources, but are the subject of current debate regarding potential adverse effects. “Controversial” chemical designations do not contribute to the product rating because the evidence of hazard is inconclusive, however they are flagged in the event a consumer wants to avoid such chemicals.

Health Hazard Rating:

Based on a count of ingredients of health concern.

Other Negative Aspect Rating:

Products that contain an ingredient that is banned from a category by regulatory agencies in the U.S., Canada, Japan or the European Union rate 0. Products that contain an ingredient that is being targeted for elimination by regulatory agencies also rate 0.

Ratings for products that contain an ingredient that is subject to regulatory restrictions in a category are capped at 8 unless the product label or its manufacturer provides data documenting that the product is in compliance with the applicable restriction.

Product Management Rating:

Products that are certified as safe or healthy by a credible third-party (e.g., USEPA Design for the Environment) rate 10. If the relevant certification involves a comprehensive evaluation and approval of a product’s formulation, those ingredients’ contribution to a product’s Health Hazard Rating will also be suppressed.

GoodGuide adjusts a product’s health rating if information is missing that is required to evaluate its potential impact.

Their health hazard evaluation requires a complete list of a product’s ingredients (with sufficient detail about chemical identity to allow ingredients to be checked against hazard lists) and information about the percent composition of a product (to characterize potential exposures and evaluate compliance with regulatory restrictions). Unfortunately, manufacturers are generally not required to provide both of these types of information for most consumer products.

For household chemical products, there is no current regulatory requirement that companies disclose full ingredient lists. For personal care products, ingredient disclosure is required, although it may include generic ingredient names that are not specific enough to support hazard evaluation. To create an incentive for full ingredient disclosure, GoodGuide caps a product’s score if it lacks complete ingredient

data or lists generic names that do not support chemical-specific evaluations. The caps applied are described as follows:

Caps applied by GoodGuide

Rating Cap	Amount of Ingredient Information Available
0	No information available
4	Some ingredient information available, but list includes generic categories potentially containing high or medium health concern ingredients
6	List includes generic fragrance, without further information
8	Some ingredient information available, but list includes generic categories potentially containing low health concern ingredients
10	All ingredients disclosed, including the constituents of generics like fragrance; or all ingredients reviewed and approved as part of a third-party certification

For household chemical products and most personal care products (with the exception of sunscreens), there is no current regulatory requirement that companies disclose percent composition data. This precludes evaluating whether a product is a potentially significant source of exposure to a chemical (e.g., presence of an ingredient at less than 0.1% of a formulation is unlikely to pose a risk, while presence of that ingredient at 10% of a formulation could be a significant source of human exposure). The absence of percent composition data also complicates the evaluation of whether a product is in compliance with applicable regulatory restrictions. Both regulatory agencies and trade associations manage the potential health risks of products by defining thresholds below which an ingredient is deemed safe as used (e.g., use of an ingredient is acceptable provided that it does not exceed 5% of a product's formulation). Unless a product label discloses the percent composition data required to evaluate compliance, GoodGuide caps a product's rating at 8 if it contains ingredients that have been restricted by regulatory agencies or trade associations.

GoodGuide increases a product's health rating if information indicates that an ingredient does not pose a health or regulatory concern as it is used in a product. This adjustment has the effect of minimizing the contribution of that ingredient to the product's health rating. Such adjustments are indicated in the "Product Ingredient List" section of GoodGuide product pages with a "Safe Use Exception" icon and an explanation of the basis for suppressing an ingredient.

Ratings may be adjusted for the following reasons:

- An authoritative third-party (such as USEPA's Safer Choice program) reviewed a product and approved its formulation.

- An authoritative third-party (such as a regulatory agency) reviewed the ingredient and determined that its use in a certain type of product (e.g., rinse-off hair products) does not result in significant exposure or health risk.
- Percent composition data indicate the level of the ingredient is below the most stringent regulatory or trade association threshold level that defines safe use; the applicable threshold is not the subject of substantial critique in regard to its health protectiveness; and the ingredient is not authoritatively linked to a health endpoint expected to pose low dose risk.

GoodGuide scientists collect data on consumer products and chemical ingredients from a variety of sources. Product ingredient lists are obtained from manufacturers, either by referencing company websites or from the manufacturer directly. Health effect information is obtained from authoritative scientific and regulatory sources. GoodGuide assesses the quality and credibility of each contributing data source. They use industry-standard identification and cross-referencing systems to facilitate matching data from external sources (e.g., chemical CAS numbers are used to connect information about product ingredients with chemical health effects).

GoodGuide states that it strives to be the most reliable source of information about the potential health effects of consumer products. They focus on ensuring they have correct and complete ingredient lists for a product, which may not always be available on manufacturer websites. They claim to have systems that allow product manufacturers to provide ingredient information directly to GoodGuide, because they are in the best position to know exactly what is in their products. Each GoodGuide product page notes the source of the ingredient data — Provided by the brand. Rated by GoodGuide.

B19.2. Scope of Chemicals Addressed

GoodGuide focuses on rating everyday household consumer products bought either from offline or online retail outlets like supermarkets or e-commerce sites. Their core product categories are personal care, household chemical and food products.

GoodGuide's goal is to rate the products that comprise the top 80% of current sales in a category, plus innovative products that are marketed as being healthy. GoodGuide use a variety of sources to define their catalogue of available products, identify relevant brands and companies and collect information about product attributes required for their ratings system.

To identify, track and organize relationships between products, brands, companies, and product categories, GoodGuide follows informatics standards used to organize consumer product and corporate information. For example, they use standard UPC codes to identify unique products. They can then link their product records to retailer-specific product identifiers as well as respond to bar code scans from mobile users. GoodGuide supplements this with a custom classification system to organize products into categories, because there is no standardized method for grouping products into consumer-relevant product categories.

B19.3. Ease of Access and Use of Chemical Information

GoodGuide may be searched in any number of ways:

- By product category (i.e., Personal Care, Household, Food, Babies and Kids)
- By subcategory (e.g., after shave, body washes and cleansers)

- By keywords, including chemical name and CAS#

Indexes are also available to facilitate searches by Category, Company, Brand, Product and Ingredients. There is no search guide available from their website.

GoodGuide also provides mobile apps that make it easy for consumers to search from their phones or other electronic devices. The GoodGuide iOS App and Android Product Scanner are free.

Users may download the GoodGuide App from the iTunes App Store or the GoodGuide Product Scanner from the Google Play store.

B19.4. Breadth and Depth of EHS Information Available

GoodGuide's product pages provide consumers with key data used to rate products (e.g., a product's ingredient list or its available certifications). However, their ratings reflect a complex assessment algorithm that uses an extensive amount of data (e.g., health effects and regulatory lists) that is difficult to republish or even consistently cite via URL in a usable and easy to maintain fashion. Thus, GoodGuide typically does not provide access to the entire set of data used to determine health concern levels assigned to ingredients, or to rate the nutritional value of a food product.

A search of information on chemical ingredients will yield GoodGuide's rating of health concerns (high, medium, low or none); a listing of health hazard statements, the product category in which it is found as an ingredient and specific brand name of products that contain it.

B19.5. Quality of the Underlying EHS Information

GoodGuide currently acquires data from over 1,000 different sources, including scientific institutions, governmental agencies, commercial data aggregators, non-governmental organizations, media outlets and corporations. Product-level information is typically obtained from the manufacturer's website or from product labels.

GoodGuide states that they strive to be the most reliable source of information on consumer products. They employ quality assurance and quality control (QA/QC) processes to ensure that the highest standards of data integrity are met and maintained. GoodGuide assesses the quality and credibility of each contributing data source based on the source's data collection process, public reputation and reviews received by experts in relevant fields. Additionally, their information architecture uses industry-standard identification and cross-referencing systems (e.g., using chemical CAS numbers to connect information about ingredients) to facilitate matching data from external sources. Their QA/QC protocols include procedures to proactively minimize data errors, resolve potential data issues, and ensure timely updates of sources.

Anyone who believes that a GoodGuide rating is incorrect or based on inaccurate data is encouraged to report the issue to them for investigation. GoodGuide does not charge any fees for investigating or correcting errors. Upon written request, they can treat submissions as confidential information. To report an error, an email can be sent to their team at GoodGuideHelp@ul.com.

GoodGuide's science team will review complaints and any provided documentation and inform complainants about our determination in a timely manner. Error reports are classified into one of the following:

- **Raw Data Error:** If a user provides evidence indicating that GoodGuide contains incorrect information about a product's identity or attributes (e.g., incorrect product-brand relationship, missing product ingredients, etc.), GoodGuide will attempt to confirm the accuracy of proposed corrections using publicly available sources. If a user proposes alternate, more up-to-date information for consideration in rating a product on any given indicator, GoodGuide will review whether their current data is misleading in the light of the new information provided. In the event that GoodGuide determines a correction or update is warranted, they will proceed to integrate the resulting rating change into their services during their next scheduled database push. If incorrect or out-of-date data materially impacts the rating assigned to a product, GoodGuide will temporarily suspend publishing that entity's record until its score can be publicly updated.
- **Scoring Methodology Dispute:** If a user raises concerns regarding GoodGuide's rating methodology (e.g., maintaining that an ingredient should have a different level of health concern or takes issue with the scoring rules we use), they will consider a user's feedback in the context of overall stakeholder feedback on the GoodGuide rating system. GoodGuide do not implement custom modifications specific to a product to their rating methodologies.. They regularly review and enhance our methodologies in response to user feedback and new scientific or regulatory developments.
- In many cases, data that would be relevant for a thorough assessment of an important attribute is unavailable for a product. This may be because GoodGuide has not yet identified a credible data source for a given issue or topic. Or it may be that the data are not publicly available because companies have not disclosed critical information. GoodGuide is working collaboratively with key stakeholders around the world, including government agencies, non-profit organizations, private research agencies, and companies to promote the quantity and quality of disclosure of important data to the public. If users are aware of data sources that have not yet included in GoodGuide that would improve their product coverage, contact GoodGuide to nominate these sources for evaluation.

B19.6. Procedures for Updating the Database with New Information

The age of data used by GoodGuide varies by source. Their stated goal is to refresh product-level information at least once every 18 months.



**Strategic Approach
to International
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**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

**A submission from the Nordic Council of Ministers - Report
on the Investigation of elements in support of the global post
2020 framework for chemicals and waste**

Note by the Secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Nordic Council of Ministers on the investigation of elements in support of the global post 2020 framework for chemicals and waste. The report is presented in the annex as received from the Nordic Council of Ministers and has not been edited by the secretariat.

The report does not necessarily reflect the views of the Nordic Council of Ministers. The report is a consultancy report and was co-financed by the Nordic Council of Ministers.

* SAICM/OEWG.3/1.

Annex

The Nordic Council of Ministers has submitted the following document for the information of the Open-ended Working Group.

Investigation of elements in support of the global post 2020 framework for chemicals and waste

Final Report

Commissioned by the Swedish Society for Nature Conservation (SSNC), Finnish Society for Nature Conservation (FANC), Norske Naturvernforbundet (Friends of the Earth Norway), and Det Økologiske Råd (Denmark), with co-funding from the Nordic Council of Ministers and the Swedish International Development Cooperation Agency (SIDA)



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This Report was commissioned by the Swedish Society for Nature Conservation (SSNC), the Finnish Society for Nature Conservation (FANC), the Norske Naturvernforbundet (Friends of the Earth Norway), and Det Økologiske Råd (Denmark), with cofunding from the Nordic Council of Ministers and the Swedish International Development Cooperation Agency (SIDA). The authors are Baskut Tuncak (Common Rights), Gretta Goldenman (Milieu), Ralph Bodle (Ecologic Institute), Florent Pelsy (Milieu), and Sarah O'Brien (Milieu).

The views expressed herein are those of the authors alone and do not necessarily represent the views of the SSNC, the FANC, FOE Norway, the DØR, the Nordic Council of Ministers or SIDA.

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EXECUTIVE SUMMARY

This analysis considers options for the global post-2020 chemicals and waste regime. It has been prepared with a view to the intersessional process underway concerning the future of the Strategic Approach to International Chemicals Management (SAICM) after 2020, as well as the recently launched Alliance for High Ambition on Chemicals and Waste and the parallel explorations concerning global arrangements to address plastic pollution and highly hazardous pesticides (HHPs). These issues overlap and will need to be considered for the post-2020 chemicals and waste management regime.

SAICM was intended to complement the existing conventions on chemicals and waste by helping States to reduce the risks of toxic chemicals left unaddressed by the patchwork of global treaties. It has pioneered a positive model of voluntary multi-stakeholder engagement where governments, international organisations, industry, and civil society organisations come together to identify challenges and possible actions. However, it lacks a mechanism for moving concerns beyond identification as emerging issues or for taking actions on substances of global concern; it has no provisions for monitoring, reporting, and evaluating what States are doing concerning chemicals management; and it is severely constrained by a lack of financial resources stemming in large part from the lack of clear obligations on States.

The SAICM goal remains as important for protection of human health and the environment as in 2006. However, a policy framework alone is not sufficient to meet the progress required for achieving sound management of chemicals and waste by 2020. A binding framework on chemicals and waste is needed if the international community is to achieve the 17 Sustainable Development Goals (SDGs) by 2030, because several of the SDGs and their accompanying targets are largely dependent on the SAICM goal.

The study concludes that certain elements of international chemicals and waste management need to be binding. In line with the Paris Agreement, the analysis also recognises the importance of a flexible approach – one that sets global objectives and standards but, in addition, builds on governments' own efforts to identify and implement the chemicals management measures best for their situation. This mix – internationally agreed objectives and binding obligations, together with national flexibility in determining country-level measures for meeting those objectives and obligations – may be viewed as a hybrid approach.

The proposed binding elements draw on the set of eleven “basic elements” for achieving the sound management of chemicals and waste at national and regional levels agreed at the 2015 ICCM4. These agreed elements include binding frameworks addressing the life cycle of chemicals and waste, and relevant enforcement and compliance mechanisms. Importantly, they also recognise the critical importance of financing the necessary national governance structures by defining industry responsibility, by setting up comprehensive cost recovery policies and systems, and by including the sound management of chemicals and waste in national development plans and budgeting processes. Setting in place coherent national governance structures for chemicals and waste will at the same time open up new, sustainable sources of revenue – a win/win situation for governments as well as citizens.

The binding elements:

- State Parties should have national systems for ensuring sound management of chemicals and waste and develop national action plans (NAP) for risk reduction
- State Parties should participate in global periodic reviews of national efforts for ensuring chemical safety.
- A mechanism should be developed within a determined number of years for reaching legally binding decisions on which chemicals outside the scope of the current chemicals treaties are of global concern and what risk reduction measures State Parties should take to reduce risk of exposure to those chemicals. This mechanism is particularly needed with respect to (1) highly

hazardous chemicals in use for pest control and (2) hazardous chemicals used in production in ways that result in exposure of workers and the environment and that may end up in products and end-of-life material waste streams, leading to further exposure.

- Transparency obligations to ensure a safe circular economy - State Parties should ensure that producers and manufacturers disclose information on chemicals hazardous to health and the environment used in products and material waste streams as well as during manufacturing, at a minimum chemicals of global concern.

Elements that can remain flexible (examples):

- National goals and targets beyond the international obligations –in developing their national action plan (NAP), the States themselves could identify other steps needed to improve national systems for ensuring chemical safety, based on the eleven basic elements of the OOG.
- Framework for emerging issues and policy approaches – a global structure, like SAICM, for discussions on emerging policy issues and approaches that would benefit from a broader discussion on the science, relevance to the international community and various approaches being employed.
- Encouragement for sustainable alternatives and support for stakeholders to use non-toxic alternatives wherever possible, e.g., agro-ecology as the alternative to highly hazardous pesticides, and avoidance or minimisation of use of hazardous chemicals in consumer products.

Other elements to consider:

- Independent scientific body to review evidence and science, especially health impacts.
- Regional bodies for chemicals management/enforcement, e.g., regional information sharing networks on chemical hazards and risks and systems for cooperating on trans-boundary movements (including illegal trade).

Costs and options for financing:

A critical element for a new binding initiative on chemicals will be an understanding of how to finance the governance measures needed on national and international level for the safe management of chemicals and waste. The study reviews each of the proposed binding and flexible elements and provides an overview of financing options. It highlights how medium and low-income countries can gain resources for financing measures on safe management of chemicals and waste throughout their life cycles, through mainstreaming chemicals management into other governance areas and through cost recovery from industry.

The path forward:

There is some momentum in other international processes for binding approaches to the related problems of plastic pollution and highly hazardous pesticides (HHPs). These issues overlap with, and are partly subsets of, the chemicals and waste management issues considered under SAICM. Rather than having these processes run in parallel and compete for political buy-in, it could be considered to link or even merge them. The circular economy could provide a useful and suitable framing, under which toxic substances of global concern in production, including their use in products, materials, agriculture and other facets of the economic value chain, could be discussed and negotiated.

The binding elements proposed could also underpin a global framework that would address the related problems of toxic substances in plastics and other materials, as well as highly hazardous pesticides, providing the holistic and comprehensive control mechanisms needed to underpin a safe circular economy throughout the world. And finally, the proposed approach would maintain the unique ability of SAICM to raise global awareness on emerging issues and on policy approaches to reduce potential risks to human health and the environment.

1 INTRODUCTION

This report is a contribution to the international discussions on what the global post-2020 chemicals and waste regime should look like. It has been prepared with a view to the intersessional process underway concerning the future of the Strategic Approach to International Chemicals Management (SAICM) after 2020, as well as the recently launched Alliance for High Ambition on Chemicals and Waste and the parallel explorations concerning global arrangements to address plastic pollution and highly hazardous pesticides (HHPs). These issues overlap with, and are partly subsets of, the chemicals issues considered under SAICM and will need to be taken into account for the post-2020 chemicals and waste management regime.

SAICM grew out of global discussions on how to support implementation of the Stockholm, Rotterdam and Basel Conventions and to address the management of the many chemicals not covered by the chemicals conventions. It was launched in 2006 as a multi-stakeholder effort focused on an ambitious goal: “to achieve sound management of chemicals throughout their life-cycle so that, by 2020, chemicals are used and produced in ways that lead to the minimisation of significant adverse effects on human health and the environment”.

A dozen plus years later, it is clear that SAICM’s voluntary approach, while useful on several fronts, has not been able to achieve its overall objective. As various studies recount¹, the production, marketing and use of hazardous chemicals continue to increase, and harmful impacts on human health and the environment continue to mount².

At the fourth International Conference on Chemicals Management (ICCM4) in 2015, with the SAICM structure scheduled to come to an end in five years, it was decided to initiate an intersessional process (IP) to discuss options for the next stage in global chemicals and waste management after 2020. This does not limit the discussion to the successor to SAICM. The multi-stakeholder process was launched in February 2017 with a kick-off meeting in Brazil and continued with a second IP meeting in Sweden in March 2018. The IP is expected to culminate in a fifth International Conference on Chemicals Management (ICCM5) scheduled for autumn 2020.

In July 2018, at the UN High-Level Political Forum (HLPF) on Sustainable Development, the Swedish Minister for Environment Karolina Skog accelerated the ambition of these discussions by announcing an international high-level initiative aimed at forging a global agreement on chemicals and waste comparable to the Paris Agreement on climate. Countries participating in the launch event included Argentina, Brazil, Canada, Finland, Germany, Jordan, the Netherlands, Norway, Switzerland, Uruguay, and USA. The High Ambition Initiative on Chemicals and Waste provides a new platform for governments and other stakeholders to consider what is needed to form a more effective architecture for international chemicals management.

In parallel, calls for global action with respect to plastics pollution have also gained momentum. In September 2018, UN Environment launched the Global Plastics Platform aimed at reducing plastics pollution and supporting the transition to a more circular economy³, and proposals for an international convention are circulating⁴. At the time of writing, the political will for this Convention to restrict certain chemicals of concern from plastics (and potentially other materials) under this initiative is uncertain.

¹ CEFIC (2017), *Facts and Figures 2017 of the European chemical industry*. (<http://www.feica.eu/cust/documentrequest.aspx?DocID=3340>)

² WHO (2016). *Public health impact of chemicals: knowns and unknown* (with 2018 data addendum). (<https://www.who.int/ipcs/publications/chemicals-public-health-impact/en/>)

³ <https://www.unenvironment.org/news-and-stories/press-release/nations-commit-fight-plastic-pollution-together-during-un-general>.

⁴ Simon, N. and Schulte, M.L. (2017). *Stopping Global Plastic Pollution: The Case for an International Convention*. Heinrich Böll Foundation. (<https://www.boell.de/sites/default/files/stopping-global-plastic-pollution.pdf>)

This report draws on the findings of several excellent studies that have already analysed the international chemicals management landscape. These include the 2013 SSNC/CIEL report *Pathways to Global Chemical Safety*⁵, the 2017 Nordic Council report *Chemicals and Waste Governance Beyond 2020*⁶ and the 2018 report on ‘Options for effective governance of the Beyond-2020 Framework for sound management of chemicals and waste’⁷. The analyses in these reports have highlighted the gaps that need to be considered in deciding the direction of global chemicals management.

This report is therefore able to start with a conclusion -- that the voluntary approach of SAICM has not been sufficient for protecting human health and the environment from chemicals-related harm. In our opinion, for the international community to move forward on controlling hazardous chemicals and waste, certain elements of international chemicals and waste management do need to be binding. In line with the Paris Agreement, the report also recognises the importance of a flexible approach -- one that sets global objectives and standards but, in addition, builds on governments’ own efforts to identify and implement the chemicals and waste management measures best for their particular situation.

In the report, we set out a number of elements that should be in a post-2020 framework on chemicals and waste management throughout their life cycle. While it makes sense to continue the useful multi-stakeholder dialogues that have characterised SAICM, at the same time a more sophisticated and effective control structure needs to be in place to counter the harmful impacts on health and the environment from the production and use of chemicals around the globe. This will require a treaty or convention, as envisioned by the High Ambition Initiative on Chemicals and Waste.

The legally binding elements we propose draw on the set of eleven “basic elements” for achieving the sound management of chemicals at national and regional levels agreed at the 2015 ICCM⁴. These agreed elements include legal frameworks addressing the life cycle of chemicals and waste and relevant enforcement and compliance mechanisms. Importantly, they also recognise the critical importance of financing the necessary national governance structures by defining industry responsibility, by setting up comprehensive cost recovery policies and systems, and by including the sound management of chemicals and waste in national development plans and budgeting processes.

Thus the report also highlights how the proposed legally binding elements will leverage more funds for governments to apply to the sound management of chemicals and waste. It draws on the LIRA Guidance prepared by UNEP⁹ to explain how setting in place coherent national governance structures for chemicals and waste will at the same time open up new, sustainable sources of revenue – a win/win situation for governments as well as citizens.

In addition, the legally binding elements proposed could underpin a global framework that would address the related problems of toxic substances in plastics and other materials, as well as highly hazardous pesticides, providing the holistic and comprehensive control mechanisms needed to underpin a safe circular economy throughout the world. And finally, they would maintain the unique ability of SAICM to raise global awareness on emerging issues and discuss policy approaches to reduce potential risks to human health and the environment.

⁵ Tuncak, B. and Ditz, D. (2013). *Pathways to Global Chemical Safety: The 2020 Goal and Beyond*, (<https://www.ciel.org/reports/paths-to-global-chemical-safety-the-2020-goal-and-beyond-tuncak-ditz-march-2013-2/>).

⁶ Honkonen, T. and Khan, S. (2017). *Chemicals and Waste Governance Beyond 2020: Exploring Pathways for a Coherent Global Regime*. Nordic Council. (<http://norden.diva-portal.org/smash/get/diva2:1061911/FULLTEXT01.pdf>).

⁷ Urho, N. (2018). *Options for effective governance of the Beyond-2020 Framework for sound management of chemicals and waste: Lessons learned from other regimes*. Center for Governance and Sustainability, (http://www.saicm.org/Portals/12/documents/meetings/IP2/IP_2_INF_14_Governance_CGS_f.pdf).

⁸ SAICM (2015). *Overall orientation and guidance for achieving the 2020 goal of sound management of chemicals*, (<http://www.saicm.org/Portals/12/documents/meetings/ICCM4/doc/K1501995%20SAICM-ICCM4-6-e.pdf>).

⁹ UNEP (2015). *Guidance on the Development of Legal and Institutional Infrastructures and Measures for Recovering Costs of National Administration for Sound Management of Chemicals*, (<http://wedocs.unep.org/handle/20.500.11822/12224>).

2 THE CURRENT CHEMICALS AND WASTE REGIME, INCLUDING SAICM, AND THE SUSTAINABLE DEVELOPMENT GOALS

Over the past two decades, the global chemical industry has undergone significant changes. When the 1998 Rotterdam and 2001 Stockholm Conventions were negotiated, the majority of chemicals were produced in Western Europe, the USA, and Japan. Today, China, India, South Africa, and Brazil are major chemical producing, consuming and exporting countries, and low and middle-income countries are all increasingly using toxic chemicals in supply and value chains as part of an increasingly globalised economy. The post 2020 global regime on chemicals and waste needs to reflect this new reality.

Legally binding instruments for management of chemicals and waste

- The *1987 Montreal Protocol on Substances that Deplete the Ozone Layer* is aimed at phasing out emissions of ozone-depleting substances (ODS). The phase-outs are step-wise, with different dates for developing and developed countries. **Covers 24 substances and groups of substances** (5 CFCs, 3 halons; 10 other CFCs, carbon tetrachloride, methyl chloroform; HCFCs, HBFCs, bromochloromethane; and methyl bromide. The 2016 Kigali Amendment adds hydrofluorocarbons (HFCs) to the Protocol's control regime due to their high global warming potential (GWP).
- The *1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal* provides for the environmentally sound management and disposal of the several hundred million tonnes of hazardous waste materials produced annually, including through controls over transboundary movements of waste. It **does not restrict specific chemicals**. A 1995 amendment that would prohibit all transboundary movements of hazardous wastes destined for final disposal from OECD (i.e., developed) to non-OECD countries has not received enough ratifications to come into force.
- The *1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade* does not ban chemicals. Rather, it gives importing countries information for taking informed decisions about whether to import certain hazardous chemicals. Countries exporting chemicals that are restricted or banned at home must inform the country of intended import that a shipment of the chemical is pending, why the chemical is restricted or banned, and wait for the importing country's consent before the shipment may take place. It **covers 50 chemicals**: 34 pesticides, 15 industrial chemicals, and one chemical in both categories.
- The *2001 Stockholm Convention on Persistent Organic Pollutants (POPs)* targets chemicals that share four properties: high toxicity, persistence in the environment, bioaccumulability in the food chain, and capacity to travel long distances through the air and water. Parties are required to eliminate or restrict the production and use of POPs listed under the Convention, develop national plans for implementing the Convention, and for environmentally sound management and destruction of POPs stockpiles. It **covers 31 chemicals**: Annex A lists 24 chemicals (13 pesticides, 9 industrial chemicals, and 2 in both categories) for elimination; Annex B lists 2 chemicals (1 pesticide and 1 in both categories) for restriction, and Annex C on unintended production lists 7 chemicals.
- The *2013 Minamata Convention on Mercury* aims to protect human health and the environment from exposure to **mercury**, which is ubiquitous throughout the globe today, due to its release to the atmosphere, soil and water from anthropogenic activities. The Convention's provisions include a ban on new mercury mines, the phase-out of existing ones, the phase out and phase down of mercury use in specified products and processes, measures to control emissions to air and releases to land and water, and controls over artisanal and small-scale gold mining. The Convention also covers disposal of mercury once it becomes waste and sites contaminated by mercury.

The number of chemicals listed in identified inventories varies widely, from between 22,000 and 140,000, depending on the nature of the economy of the respective countries; however, a relatively

small number of chemicals account for the largest share of production volume¹⁰. For example, a total of 21,403 unique substances have been registered with the European Chemicals Agency (ECHA) as placed on the EU market in volumes above one tonne per year¹¹. According to Eurostat, 322.5 million tonnes of chemicals were produced by the EU Member States in 2015, of which 63.5% (205 million tonnes) were considered hazardous to human health while 37.6% (121 million tonnes) were considered hazardous to the aquatic environment¹². These percentages overlap.

Many of the chemicals known to have qualities hazardous to human health and the environment are widespread today via the globalised economy in ways not reflected in the existing treaties. However, as the box on the previous page shows, the conventions that comprise the current global regime for managing chemicals and waste cover only a very small fraction of currently marketed hazardous chemicals and toxic byproducts (Montreal Protocol – 24+ chemicals; Rotterdam Convention – 50 chemicals; Stockholm Convention – 31 chemicals; Minamata Convention - mercury and mercury compounds).

SAICM was intended to complement the existing conventions on chemicals and waste by helping States to reduce the risks of toxic chemicals left unaddressed by the patchwork of global treaties, while also promoting their implementation. It grew out of a resolution adopted by governments participating in the 2002 World Conference on Sustainable Development in Johannesburg that called for a strategic approach to international chemicals management. A decision was taken to structure SAICM as a voluntary, multi-stakeholder forum where governments, international organisations, industry, and civil society organisations could come together to identify challenges and possible actions.

SAICM is essentially a policy framework. It is based on three documents agreed at the first International Conference on Chemicals Management (ICCM1) in 2006. The first, the Dubai Declaration on International Chemicals Management, documents the high-level political commitment made by participating governments, while the second, the Overarching Policy Strategy (OPS), sets out SAICM's scope, objectives, underlying principles, and implementation and review arrangements. The 46 objectives are grouped into five thematic focus areas: risk reduction, knowledge and information, governance, capacity-building and technical cooperation, and illegal international trade. A third, complementary document is the Global Plan of Action (GPA). It lists 273 activities, accompanied by indicators, to be implemented by stakeholders, as appropriate, without indicating which activities should be given priority.

In 2015, with the aim of providing some type of strategic focus, the fourth International Conference on Chemicals Management adopted the Overall Orientation and Guidance (OOG) document. This sets forth 11 basic elements agreed as necessary for sound chemicals and waste management at national level, as per the box below.

11 basic elements considered critical for sound chemicals / waste management

- (a) Legal frameworks that address the life cycle of chemicals and waste;
- (b) Relevant enforcement and compliance mechanisms;
- (c) Implementation of chemicals and waste-related multilateral environmental agreements, as well as health, labour and other relevant conventions and voluntary mechanisms;

¹⁰ Geiser, K. (2015). *Chemicals without Harm: Policies for a Sustainable World*. (<https://mitpress.mit.edu/books/chemicals-without-harm>).

¹¹ Registered substances, ECHA, (<https://echa.europa.eu/information-on-chemicals/registered-substances>).

¹² Hazardous to health covers the following 5 classes: (1) Harmful to health hazard, (2) Toxic health hazard, (3) Very toxic to health hazard, (4) Chronic toxic health hazard, (5) Carcinogenic, mutagenic and reprotoxic (CMR) health hazard. Hazardous to the environment chemicals covers the following 5 classes: (1) Significant acute environmental hazard, (2) Chronic environmental hazard, (3) Moderate chronic environmental hazard, (4) Significant chronic environmental hazard, (5) Severe chronic environmental hazard. This division is based on their hazard on the aquatic environment and does not include PBT or vPvB. (https://ec.europa.eu/eurostat/statistics-explained/index.php/Chemicals_production_and_consumption_statistics).

11 basic elements considered critical for sound chemicals / waste management

- (d) Strong institutional frameworks and coordination mechanisms among relevant stakeholders;
- (e) Collection and systems for the transparent sharing of relevant data and information among all relevant stakeholders using a life cycle approach, such as the implementation of the Globally Harmonized System of Classification and Labelling of Chemicals;
- (f) Industry participation and defined responsibility across the life cycle, including cost recovery policies and systems as well as the incorporation of sound chemicals management into corporate policies and practices;
- (g) Inclusion of the sound management of chemicals and waste in national health, labour, social, environment and economic budgeting processes and development plans;
- (h) Chemicals risk assessment and risk reduction through the use of best practices;
- (i) Strengthened capacity to deal with chemicals accidents, including institutional-strengthening for poison centres;
- (j) Monitoring and assessing the impacts of chemicals on health and the environment;
- (k) Development and promotion of environmentally sound and safer alternatives.

SAICM has pioneered a positive model of multi-stakeholder engagement. It has brought together representatives of government, industry and civil society organisations (CSOs) to share perspectives and develop agreements on ways forward. It has helped to identify a number of emerging policy issues and in the area of lead in paint it has pushed forward initiatives aimed at a global phase-out.

In addition, its work on the LIRA guidance¹³ has highlighted a viable way for medium and low-income countries to gain new resources for financing measures on safe management of chemicals and waste, through **mainstreaming** chemicals management into other governance areas and through cost recovery from industry.

However, while SAICM's structure has some of the trappings of a binding international agreement, it does not impose obligations on participating governments, which has limited transparency, accountability and the mobilisation of financial resources regarding sound chemicals management. Moreover, its governing body lacks an effective mechanism for taking binding decisions on issues of global concern. In addition, it lacks a number of elements that we consider necessary for effective international chemicals management:

- there is no mechanism for moving policy concerns beyond identification as emerging issues or for taking actions on substances of global concern;
- it has no provisions for monitoring, reporting, and evaluating what States are actually doing concerning chemicals management, e.g. with respect to the 11 basic elements they have already signed up to, though evidence is growing that they are not doing enough; and
- it is severely constrained by a lack of financial resources stemming in large part from the lack of clear obligations on States, including the obligation to set in place the regulatory frameworks for protection of health and the environment.

Moreover, several of the terms in the SAICM goal are ambiguous. Instead of “sound chemicals management”, it may be more ambitious and precise to use the term “safe chemicals and waste management throughout their life cycle”. In addition, it would be useful to give guidance concerning what might be a “significant” adverse effect, and to use the term “prevention” rather than “minimisation” of adverse effects.

¹³ UNEP, 2015. UNEP Guidance on the Development of Legal and Institutional Infrastructures and Measures for Recovering Costs of National Administration for Sound Management of Chemicals (LIRA) (<http://wedocs.unep.org/handle/20.500.11822/12224>).

The SAICM goal remains as important for protection of human health and the environment as in 2006, but should be broadened to include waste. However, without binding obligations, the policy framework of SAICM is not sufficient to meet the progress required for achieving sound management of chemicals by 2020, and beyond.

If the international community is to achieve the 17 Sustainable Development Goals (SDGs) by 2030¹⁴, a binding framework on chemicals and waste is also needed. This is because several of the SDGs and their accompanying targets are largely dependent on the SAICM goal. The SDGs and targets most closely linked to the SAICM goal of sound management of chemicals and waste are provided in the table below:

2030 Sustainable Development Goals linked to safe chemicals management	
SDG 2:	End hunger, achieve food security and improved nutrition and promote sustainable agriculture Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
SDG 3:	Ensure healthy lives and promote well-being for all at all ages Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
SDG 6	Ensure availability and sustainable management of water and sanitation for all Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
SDG 7	Ensure access to affordable, reliable, sustainable and modern energy for all Target 7.A By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
SDG 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead Target 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment
SDG 11	Make cities and human settlements inclusive, safe, resilient and sustainable Target 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
SDG 12	Ensure sustainable consumption and production patterns Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimise their adverse impacts on human health and the environment Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
SDG 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

¹⁴ The SDGs were adopted in 2015 by the UN. See UN General Assembly Resolution 70/1 (2015): *Transforming our world: the 2030 Agenda for Sustainable Development*: (http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E).

At the first intersessional meeting to consider SAICM and the sound management of chemicals and waste beyond 2020, stakeholders highlighted the need for the post 2020 framework to:

‘take into account the 2030 Agenda for Sustainable Development in its entirety and in particular goals 3, 6 and 12, recognising that the sound management of chemicals and waste is an essential prerequisite for sustainable development while respecting the integrated nature of the Sustainable Development Goals’¹⁵.

They also noted the need to link with other agendas such as biodiversity, oceans and climate change, food and agriculture, health, gender and labour.

¹⁵ Co-chairs’ summary

(<http://www.saicm.org/Portals/12/documents/meetings/IP1/co-chair-summary/Co-chairs'%20summary%20english.pdf>)

3 SOFT AND HARD LAW OPTIONS INVESTIGATED

The commission for this report asked for consideration of possible approaches for developing legally binding mechanisms to foster the implementation of the future SAICM framework beyond 2020: a “soft” approach of developing voluntary standards that would become legally binding once adopted into national law, and a “hard” approach of going directly to elements legally binding at the international level, either within the SAICM post 2020 framework or as a new external convention.

The “soft” approach

Under the “soft” approach, countries would join in a process of developing common standards with a view towards their subsequent adoption into national legal frameworks and implementation within their national territories. This “soft” approach was used to develop the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)¹⁶ and it partly describes the status quo with SAICM today.

In the case of GHS, countries (and the chemical industry) had a strong incentive to cooperate on harmonisation of classification systems since the effort was needed to remove technical barriers to trade created by differing national systems. But GHS took a long time to develop and agree. The decision to develop GHS was taken at the 1992 Rio conference. The first version was published in 2003, and a third revision published in 2009. However, the GHS system has been implemented in only 67 countries to date (2018), and mostly in industrialised countries, including China, that are involved in the export of chemicals. Low income countries in Africa and Asia, which are mostly importers of chemicals, have lagged in implementing GHS.¹⁷

A “soft” system of voluntary standards would be less challenging politically. More stakeholders might support giving the successor to SAICM, or the post 2020 framework of chemicals and waste management, a function involving development of global standards that parties could choose to make legally binding on national level, with the long-term vision being that all parties would eventually adopt them.

However, as already seen with GHS, once certain standards were agreed, there would be no guarantee or even incentive for countries – especially low-income countries -- to implement the standards within a reasonable time frame. This would weaken the overall global objective of achieving sound management of chemicals and waste. If evidence emerged that global bans or restrictions were in order, it is difficult to see how this approach could lead to an effective response. Moreover, this “soft” approach would be unlikely to generate any new sources of funding for the process of reaching agreement and subsequent implementation.

In summary, a purely voluntary “soft” law approach would perpetuate many of the frustrations with the current voluntary approach of SAICM, including the lack of clear obligations on stakeholders, the only limited adoption of risk reduction measures, the lack of effective means for addressing “emerging policy issues” and “issues of concern”, and the limited financial contributions of States and businesses.

The “hard” approach

A “hard”, i.e. directly legally binding, approach would be more effective and efficient in achieving certain chemicals management objectives, such as implementation of the 11 “basic elements” of the OOG, restrictions or phase-outs of chemicals of global concern, or mandatory labelling of products

¹⁶ Globally Harmonized System for the Classification and Labelling of Chemicals (https://www.google.com/url?q=https://www.unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev04/English/ST-SG-AC10-30-Rev4e.pdf&sa=U&ved=0ahUKEwip6K3TxIThAhXS8qYKHbVIARsQFggGMAE&client=internal-uds-cse&cx=015747183538840128847:7r0qtadycj4&usq=AOvVaw29Nxjoa6rmFBLxbeLkoy3J)

¹⁷ GHS implementation map, (<http://ghs.dhigroup.com/GHSImplementationMap.aspx>).

with hazardous chemicals on the global market. At the same time, it could co-exist with the types of “soft” measures that have been useful under SAICM, such as knowledge sharing on emerging policy issues, capacity building, and information exchange.

The “hard” elements of a post 2020 global chemicals and waste management framework could take different forms. It could be part of a mixed post 2020 regime – a voluntary multi-stakeholder process similar to SAICM in combination with existing and new legally binding elements, or perhaps a process for agreeing when certain new elements should become legally binding on all participating countries.

These legally binding elements for a post 2020 global chemicals regime could include requirements for all parties to have minimum systems for the sound management of chemicals and waste (e.g. basic elements of the OOG) while allowing national governments some flexibility in setting objectives and approaches. This would be similar to the approach taken by the Paris Agreement on climate change.

With clearer obligations and more pressure for implementation on participating States, a framework containing legally binding elements could be far more conducive to mobilising financial resources from donor countries. In the authors’ opinion, such a framework would have the greatest chance of levelling standards of protection across all jurisdictions and catalysing a global shift toward safer chemicals that do not have certain intrinsic hazards or properties.

4 PROPOSED: A HYBRID APPROACH

Several stakeholders, including the governments participating in the international high-ambition initiative to develop a global agreement on chemicals and waste, have mentioned the 2015 Paris Agreement on climate as a possible model.¹⁸

The Paris Agreement is interesting in that it sets a common objective for all nations: to keep the increase in global temperature to well below 2° Celsius. It then relies on governments to set their own national objectives and to identify the measures they will take to achieve this global goal, as well as to address the climate change-related challenges within their territories. The main tool for doing this is through the development of national climate plans, the so-called “nationally determined contributions” (NDCs). Each party is under an obligation to prepare and submit an NDC and regularly report on its implementation. The reports undergo expert review and multilateral consultation. Every five years parties carry out a “global stocktake” which assesses collective progress. Parties are obliged to update their NDCs every five years, with rising ambition in light of the stocktake.

Implementation of the NDCs will be encouraged via the periodic reporting, individual review and the global stocktake. The Paris Agreement also sets differentiated financial obligations aimed at supporting the actions to be taken by developing countries, along with the most vulnerable countries.

This mix – internationally agreed objectives and legally binding obligations, together with national flexibility in determining the country-level measures for meeting those objectives and obligations – may be viewed as a hybrid approach. We explain further below.

4.1 WHAT ELEMENTS NEED TO BE LEGALLY BINDING

Rules can be legally binding at different regulatory levels, mainly international law, EU law and the respective national laws. Actors such as states can be subject to binding rules as well as obliged to set binding rules. For instance, a state can be obliged by a treaty to ban a certain chemical. This obligation would be binding upon the state in international law. That state would normally fulfil its obligation under international law by enacting and implementing corresponding laws in its national legal system and therefore also act as rule-maker. These national laws would then be binding upon the addressees in the national jurisdiction, e.g. chemical companies. Traditionally, companies are not subjects of international law and have no obligations from this legal order.¹⁹ Binding elements at the international level would therefore address states.²⁰

Making elements of a post 2020 chemicals and waste management framework binding for states requires a treaty.²¹ The elements could be laid down in a new stand-alone treaty, amendments to existing treaties, or combined. It is important to distinguish between the legal form and structure of a treaty as a whole and the specific content of its individual provisions and elements. While formally speaking the whole of a treaty is binding upon its parties, the wording of each provision can be more or less precise and prescriptive, and still leave ample flexibility for states.²²

¹⁸ Alliance for High Ambition on chemicals and waste launched in New York (<https://www.government.se/press-releases/2018/07/alliance-for-high-ambition-on-chemicals-and-waste-launched-in-new-york/>).

¹⁹ However, this view has been under debate for a long time in particular because of the special nature of investment treaties, in which states and companies enter into agreements at the international level.

²⁰ In this paper, unless stated otherwise we use the term „state“ so as to include the EU and other relevant subjects of international law.

²¹ The other two sources of international law, i.e. customary law and general principles of law, are irrelevant for this paper.

²² See Bodle, Ralph and Oberthür, Sebastian (2017), “Legal form of the Paris Agreement and nature of obligations”, in: Klein, Daniel, Maria Pia Carazo, Meinhard Doelle, Jane Bulmer and Andrew Higham (eds.), *The Paris Climate Agreement. Legal Analysis and Commentary*, Oxford: Oxford University Press.

In addition, a treaty could typically include an institutional structure through which parties regularly meet and agree on guidance and details on its implementation.

4.1.1 National and regional systems for ensuring chemical safety

The post-2020 framework for chemicals and waste management should contain an obligation for State Parties to have national and regional systems for ensuring chemical safety.

Explanation

A system at the national level consisting of: (1) legislation to protect human health and the environment from toxic chemicals; (2) enforcement and compliance mechanisms; (3) strong institutional frameworks for coordination among relevant actors²³; (4) information collection and distribution systems; (5) risk assessment and risk reduction policies; (6) capacity to handle chemical accidents and disasters; and (7) cost-recovery systems. The actual treaty provision would not need to be more precise or detailed than this. A life-cycle approach is essential for these elements, particularly with respect to legislation and information.

Such national systems would, if properly designed, include features that enable progress toward implementation of international agreements; ensure industry participation; mainstream chemicals and waste management in development plans and budgets; include monitoring and assessment of health impacts; and promote the development and adoption of safer alternatives. As discussed below, these features are recognised at the global level as “basic elements” of chemicals and waste management.²⁴

As part of implementing these basic elements, States could be required to develop and communicate a National Action Plan (NAP) for chemicals and waste management that would assess their existing systems and identify priority gaps, inventory their chemicals risks, and create a concrete list of actions to be taken during a period of time to strengthen legislation and reduce priority risks. The below mentioned periodic review is an essential component of the NAP as it would both help to strengthen the quality of NAP and incentivise its development and implementation.

Justification of why this is needed

SAICM participants negotiated and recognised in 2015 eleven “basic elements” necessary to achieve and maintain the sound management of chemicals and waste as part of the Overall Orientation and Guidance (OOG).²⁵ While the ICCM has not adopted a definition of “sound chemicals management,” these elements are the foundation for States to protect human health and the environment from toxic chemicals and waste and could be argued to be the de-facto definition at the global level.

The above-enumerated seven aspects (legislation, enforcement, coordination, information, risk assessments and risk reductions, accident/disaster management capacity, and cost recovery systems) are explicitly included in the eleven basic elements recognised by SAICM participants. The other features mentioned above are the remaining elements recognised by SAICM to achieve the sound management of chemicals and waste, which are enabled by, if not dependent on, States having these seven aspects in place.

The ICCM’s endorsement of the OOG and the eleven basic elements reflects international consensus on the need for all States and regions to have such risk reduction systems in place.

²³ Including government ministries and agencies, business enterprises that produce and use chemicals, civil society, trade unions and other actors as relevant.

²⁴ SAICM OOG paragraph 19, (<http://www.saicm.org/Portals/12/documents/meetings/ICCM4/doc/K1501995%20SAICM-ICCM4-6-e.pdf>).

²⁵ See section 2 for a list of the eleven “basic elements”.

While States do not question the importance of having national chemicals and waste management systems, most do not prioritise this, particularly in the context of economic development. In low and middle-income countries, prioritising chemicals and waste management is extremely challenging and perceived as a luxury. Having the clear obligation under international law to develop national systems can help both ensure the systems are put in place and raise the profile in developing countries. In creating these systems, a virtuous cycle can be created as national authorities gain a clearer understanding of the risks and impacts nationally (and needs), which can then translate to higher priority for resources and stronger risk reduction systems.

Benefits and challenges

Following decades of voluntary initiatives to promote the sound management of chemicals, including the 2020 Goal, a large number of States continue to lack necessary systems for ensuring chemical safety. Meanwhile, risks to health and the environment continue to increase with accelerating manufacture and use of toxic chemicals and subsequent generation of waste in their jurisdiction. There is no evidence in the independent evaluation of the Strategic Approach from 2006-2015 why a continuation of existing soft law provisions for States to establish systems for chemical safety would lead to the development of necessary systems to achieve a framework for the sound management of chemicals and waste in the coming years. Stronger requirements are necessary to compel countries to ensure that such systems are put in place, particularly in low-income countries that continue to prioritise other development concerns over chemicals management.

A clear obligation to have national systems for risk reduction would help States to implement all eleven basic elements of sound chemicals and waste management. The obligation to prepare and communicate NAPs, together with transparency of action through regular reporting to the treaty, would enable monitoring, reporting and evaluation of each States' progress, which is currently lacking under the voluntary SAICM. Furthermore, the requirement under international law would help increase the priority of the issue at the national and regional levels, enabling mainstreaming in development budgets, among other benefits.

The various sources of financial resources required to help States develop and implement their NAP, which would be a challenge for several States, are discussed in Section 5. A UN Institute for Training and Research (UNITAR) led initiative to assess national chemical profiles could be updated and enhanced to expedite and reduce the costs of the development of NAPs.

Indeed, State participants to ICCM have already agreed on the eleven basic elements as part of the SAICM process, and thus it would not be a huge leap for them to accept this as an obligation as part of the future post 2020 framework for chemicals and waste management. However, the obligations regarding many of these aspects could not be expected to be very prescriptive because States have varying chemical risk profiles, levels of sophistication in chemicals management at present, and differing approaches to risk reduction.

Thus, a legally binding obligation on States to establish the basic elements of chemicals and waste management with the flexibility for each country to determine nationally the details of the elements (as well as measures to ban or restrict chemicals of national or global concern) appears most promising as an approach.

This so-called “hybrid” option of legally binding obligations combined with flexibility for certain options would obligate States to have national systems for risk reduction in place and to develop a NAP, identifying themselves what steps will be taken during a fixed time period to improve national systems for ensuring chemical safety. The experience of the Paris Agreement indicates a greater political appetite for this type of approach.

This hybrid approach would give States the flexibility to improve their systems to address the chemicals and waste-related risks more pressing in their jurisdiction, whether industrial or agricultural or both. It would also encourage all States to reduce risks, irrespective of their level of chemicals and waste control at present. Nationally developed plans would reduce concerns over national sovereignty.

Attempts to reach consensus on the listing of chemicals under global treaties can hinder States from taking national measures on chemicals of national and global concern—even when safer and viable alternatives exist and there is an overwhelming majority in favour of global action. Asbestos and paraquat are notable examples under the Rotterdam Convention. States may be empowered to take action nationally on chemicals of concern through the development of and updates to their NAPs, building toward global consensus on bans or restrictions from the bottom up, without the annual or biannual negotiations on global decisions to be taken. However, this would not foreclose the possibility of global phase-outs through a mechanism on chemicals of global concern that are not covered by the Stockholm and Minamata Conventions (see below 3.1.3).

Although States would retain flexibility in developing their NAPs, they would however still have requirements regarding the NAPs structure and content (i.e. the seven elements above, or all eleven of the Overall Orientation and Guidance Document) as well as requirements regarding a review of each State's or collective progress (see discussion on periodic review below). Consistent with the participatory approach of SAICM, the role of civil society should be preserved in the development, implementation (to some degree) and monitoring of the NAP. This participatory approach, together with the periodic review discussed below, could help with ensure that the flexibility given to States in the development of the NAP does not hinder progress.

4.1.2 Periodic review system of State efforts

The post-2020 chemicals and waste management framework should contain an obligation for State Parties to participate in a global periodic review of national efforts for ensuring chemical safety, with respect to the seven elements above.

Explanation

A system whereby national efforts to ensure chemical safety is assessed, utilising a periodic review model.

Under a periodic review process for chemicals and wastes, each State would declare actions taken to develop effective systems for the sound management of toxic chemicals and wastes. States could report on actions taken for sound management of chemicals and waste, and other States and stakeholders may evaluate these steps and offer recommendations for improvement and follow-up. While primarily a State-driven peer-review process, participation of various stakeholders including NGOs and other non-State actors should be a critical component of the mechanism.

This could be linked to National Action Plans (NAPs) for the sound management of chemicals and wastes, where States would communicate such plans and progress reports for periodic review at the global level. A panel of government representatives or experts (five for example) would be entrusted to review the submitted national assessments, NAPs and progress reports, and to propose recommendations to the State under review. The composition of the panel could either take the multi-stakeholder approach of SAICM composed of experts from government, business, civil society, trade unions, and academia, or a State-to-State but participatory approach where any State may provide input for the consideration of reviewing States in finalising the review. Each State could have the responsibility to review a certain number of countries per year, depending on the size of the panel and its composition. States would be grouped in review cycles, such that a fraction of States would be reviewed every year (for example approximately 60 States reviewed each year with a 3-year review cycle).

Similar systems of periodic review are used at the international level to assess progress of States. The Universal Periodic Review (UPR) model used by the UN Human Rights Council²⁶ is particularly relevant model for consideration under the post-2020 framework. The UPR is a unique, comprehensive, and universal reporting and review process that involves an objective and non-confrontational review of all UN Member States' performance under several individual treaties, with an inclusive multi-stakeholder participatory approach.²⁷ It assesses State performance in light of a number of individual international agreements (up to nine), each established with a view toward the achievement of a common overall objective, similar to the 'cluster' of multilateral environmental agreements, labour conventions and other international instruments relevant to the sound management of chemicals and wastes. The participatory approach of the UPR is highly compatible with the participatory nature of SAICM.

Other environmental and labour topics are utilising various other forms of periodic review. Under article 13 of the UNFCCC Paris Agreement, a "transparency framework" was established "to track progress made in implementing and achieving its nationally determined contribution" to reducing greenhouse gas emissions, among other information. Also, the Convention on Biological Diversity adopted in 2016 a pilot project to utilise a voluntary peer review process for national biodiversity planning to improve the individual and collective capacities of States to halt biodiversity loss.²⁸ The ILO is also discussing a voluntary peer review process for national employment policies.²⁹

Justification of why this is needed

Reporting and monitoring will be essential to ensure transparency and progress under various elements of the post-2020 chemicals and waste management framework. Whether States are to have national action plans, information sharing provisions and/or a mechanism for phase outs of chemicals of global concern, reporting and evaluation is a critical component.

The present chemicals and waste management cluster suffers from unsatisfactory reporting and review mechanism. In particular, there is no meaningful assessment of national efforts on sound chemicals management under SAICM or otherwise,³⁰ as "no institution is responsible for exercising strategic oversight and monitoring with respect to chemicals and waste management."³¹ Statistics on reporting reveal limited reporting rates of States under SAICM.³² These weak reporting and review mechanisms prevent supervisory or oversight roles within the existing structure of SAICM in achieving the sound management of chemicals.³³ While reporting under Conventions is better than SAICM, the reporting rates under Basel and Stockholm Conventions have also not been as good as needed. Under Stockholm, 22 % of Parties gave complete reports and 33 % did not report.³⁴ In the case of Basel, only 10 % of Parties gave complete reports, with 11 % not reporting.³⁵

²⁶ Universal Periodic review, Human Rights Council. (<https://www.ohchr.org/en/hrbodies/upr/pages/uprmain.aspx>). A similar idea was suggested by the Center for Governance and Sustainability in a March 2018 meeting of SAICM.

²⁷ Ibid.

²⁸ Convention on Biological Diversity, (<https://www.cbd.int/nbsap/vpr/default.shtml>).

²⁹ Follow up discussion on the voluntary peer-review mechanisms of national employment policies,

(https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_618110.pdf).

³⁰ Honkonen and Khan, Chemicals and Waste Governance Beyond 2020: Exploring Pathways for a Coherent Global Regime (Nordic Council of Ministers, 2017), pages 6, 56, 58 (<http://norden.diva-portal.org/smash/get/diva2:1061911/FULLTEXT01.pdf>).

³¹ Ibid.

³² Terekhova, Vickers, & Koekkoek, 2016. Indicators of progress and monitoring. Integrated. National Implementation of SDGs and International Chemicals and Waste Agreements. International Expert and Stakeholder Workshop.

³³ SAICM, SAICM/IP.2/INF.14, page 6 (http://www.saicm.org/Portals/12/documents/meetings/IP2/IP_2_INF_14_Governance_CGS_f.pdf); Geneva Academy, Economic, Social and Cultural Rights and Sustainable Development Goals (Research Brief May 2018) (<https://www.geneva-academy.ch/joomlatools-files/docman-files/Research%20Brief%20Economic,%20Social%20and%20Cultural%20Rights%20and%20SDGs.pdf>) (hereafter Geneva Academy).

³⁴ 2018 Environmental Performance Index Report (<https://epi.envirocenter.yale.edu/2018-epi-report/introduction>).

³⁵ Ibid.

Although sound chemicals and waste management is a target of the Sustainable Development Goals (SDGs), the SDG review process does not address the problem of insufficient oversight and monitoring for chemicals and wastes. There are concerns that the SDG Follow-up and Review (FUR) architecture is based on voluntary national reviews and peer-reviewed soft guidance.³⁶ The process also has inadequate representation and participation of civil society, as government-appointed representatives primarily undertake reviews.³⁷ Furthermore, States do not benefit from country-specific recommendations, which could provide tailor-made suggestions on SDG implementation and measures to improve chemicals management in light of national circumstances.³⁸

Benefits and challenges

Mandatory reporting requirements, coupled with participatory but State-led peer-review and recommendation process, have proven successful in the case of the Universal Periodic Review. Since its beginning in 2008, the UPR has received 100 % participation, twice, by UN Member States. It is the first human rights mechanism to do so. In addition, due to its very nature, the UPR permits civil society to advocate and to take part in implementation of human rights obligations.

The UPR has strengthened national level coordination, through the involvement of various State entities in national coordination mechanisms for reporting and follow-up.³⁹ Concrete results are shown at national levels, where UPR recommendations feed into national development initiatives,⁴⁰ for example through legal reforms and national action or implementation plans.⁴¹ Such coordination between governmental and non-governmental entities in various sectors including health, trade, agriculture, and environment, is crucial for protection of health and the environment from toxic substances and waste.

The participation of civil society and other stakeholders in the process would preserve one of the most positive features of SAICM. While the UPR is a State-driven peer-review process, participation of various stakeholders including NGOs and NHRIs is considered a critical component of the mechanism.

One of the unavoidable challenges of such a periodic review process is to ensure States are able and willing to implement resultant recommendations domestically. However, the results from the UPR system are encouraging, particularly in comparison with the progress under SAICM to date. An analysis showed “48 percent of UPR recommendations triggered action by mid- term, meaning that the recommendations were either fully or partially implemented only 2.5 years after the initial review.”⁴² It remains to be seen how effective the voluntary peer review processes, such as that of the CBD, will prove in the long term. In addition, there is the obvious challenge of financial resources for the process, apart from the development of assessments, NAPs and progress reports, options for which are discussed below in section 5.

³⁶ Ibid.

³⁷ Center for Governance and Sustainability, SAICM, SAICM/IP.2/INF.14, (http://www.saicm.org/Portals/12/documents/meetings/IP2/IP_2_INF_14_Governance_CGS_f.pdf).

³⁸ Geneva Academy, Economic, Social and Cultural Rights and Sustainable Development Goals, page 3 (Research Brief May 2018), (<https://www.geneva-academy.ch/joomla-tools-files/docman-files/Research%20Brief%20Economic,%20Social%20and%20Cultural%20Rights%20and%20SDGs.pdf>).

³⁹ HRC 37, Annual high-level panel discussion on human rights mainstreaming, (https://sustainabledevelopment.un.org/content/documents/18221HRC_and_the_2030_Agenda_HLPF_2018.pdf).

⁴⁰ The Danish Institute for Human Rights, Rights in Follow-Up and Review of the 2030 Agenda For Sustainable Development, page 34.

(https://www.humanrights.dk/sites/humanrights.dk/files/media/dokumenter/udgivelser/sdg/may_17_follow-up_and_review_sdg_docx.pdf).

⁴¹ HRC 37, Annual high-level panel discussion on human rights mainstreaming.

⁴² UPR-info, *Beyond Promises* (2014) (https://www.upr-info.org/sites/default/files/general-document/pdf/2014_beyond_promises.pdf).

4.1.3 Mechanism to phase out chemicals of global concern

The post-2020 chemicals and waste management framework should include a provision to develop within a determined number of years a legally binding mechanism for reaching decisions on chemicals that are currently not covered by existing conventions but are of global concern and what risk reduction measures State Parties are obliged to take to reduce risk of exposure to those chemicals.

Explanation

The post-2020 chemicals and waste framework should include a commitment to develop a legally binding mechanism or process for reaching international decisions concerning whether a chemical (or group of chemicals) not covered by existing conventions should be considered of “global concern” such that its production and use is subject to international restriction and eventual phase-out within a certain number of years. The mechanism should also include a process for identifying the risk reduction measures to be taken by State Parties for reducing risk of exposure to those chemicals. The mechanism would ideally prioritise elimination of uses of a chemical considered of global concern and not essential from a societal point of view as well as identify those uses important to society where alternatives would need to be developed.

As described below, the mechanism would address chemicals of global concern that are not included in the scope of existing treaties, including for example per-fluoroalkyl substances (PFASs), various toxic substances in plastics, and highly hazardous pesticides. Such a mechanism would help to ensure a more holistic and meaningful global reduction in toxic exposures. It would avoid the problem of narrowly defined issues or substances or materials of global concern, which runs the grave risk of regrettable substitution and challenge the limited resources of States for participating in an increasing multitude of international processes.

The assessment of essentiality would draw on the Montreal Protocol’s criteria for determining whether a use of a controlled substance was essential, i.e., necessary for health, safety or critical for the functioning of society, and no technically and economically feasible alternatives or substitutes acceptable for environment or health were available.⁴³ This differs from the socio-economic analyses (SEA) used under some existing chemicals management regimes.⁴⁴

In practice this would require some type of subsidiary body to discuss which substances are of global concern and whether certain uses of the substance are essential or not. The subsidiary body would then forward its recommendations for particular actions to the treaty’s conference of the parties (CoP), for final decision. The subsidiary body would thus have a function similar to the Rotterdam Convention’s Chemicals Review Committee or the Stockholm Convention’s POPRC. The independent scientific body discussed in section 4.3.1 could play a role in identifying chemicals of global concern for consideration by the subsidiary body and eventual decision-making by State Parties.

The SAICM Chemicals in Products Programme defines ‘chemical of concern’ as a chemical which, due to its inherent hazardous properties, presents a known or reasonably suspected risk to human health and/or the environment.

⁴³ Montreal Protocol, Decision IV/25 of the 4th Meeting of the Parties (MOP4), (https://ozone.unep.org/meetings?range_start=1986&range_end=1992&meeting_types%5Bcop%5D=cop&meeting_types%5Boewg%5D=oe wg&meeting_types%5Bimpcom%5D=impcom&meeting_types%5Bbureaux%5D=bureaux&meeting_types%5Bmop%5D=mop&meeting_types%5Borm%5D=orm&meeting_types%5Bworkshops%5D=workshops&meeting_types%5Bmisc%5D=misc&form_build_id=form-ICpT-uDGrkNmI-348qdncasifGYUCchEScKQVXeYuVw&form_id=ozone_meeting_document_search_form#).

⁴⁴ The EU REACH Regulation includes SEA as a tool in taking decisions on chemical risk management, i.e., to evaluate the costs and benefits of a particular action for society compared to a situation where the action is not implemented. For example, in cases where authorisations or restrictions are considered for SVHCs without safe thresholds such as PBT or certain CMRs, the SEA may assess whether any remaining risks are counterbalanced by socioeconomic benefits.

The question of what might constitute a ‘chemical of global concern’ requires more reflection. The Stockholm Convention requires evidence that the chemical is likely “as a result of its long-range environmental transport to lead to significant adverse human health and/or environmental effects such that global action is warranted”.⁴⁵ It only refers to long-range environmental transport through air, water or migratory species.⁴⁶

But this concept is no longer sufficient. It needs to be updated to reflect the different ways a chemical may have a global impact today. Today’s global marketplace and the reach of its supply chains and material waste streams bring new potential for widespread human and environmental exposure to various hazardous chemicals. A chemical may be transported to other parts of the globe far from the site of the chemical’s production, if it is used in a product shipped to customers in other countries and eventually disposed of in yet another locality.

A mechanism to address chemicals or groups of chemicals of global concern will need flexibility in order to take account of changes in global production and patterns of use and end-of-life disposal. It will be important to be able to link to new scientific knowledge concerning negative impacts from chemical exposures, including impacts on vulnerable populations and from chronic exposures to multiple chemicals (“cocktail effects”).

The mechanism may also need to be shielded from powerful stakeholders with an interest in preserving the market for certain high-risk chemicals, as has been the experience with efforts to bring additional chemicals under the framework of the Rotterdam Convention. Here the international community may be able to draw on the example of the UN Framework Convention on Tobacco Control which has taken steps to prevent corporate capture by the tobacco industry.

The Montreal Protocol is an example of an international agreement with a provision that allows the Parties to adjust its control measures in the light of new scientific knowledge. Once agreed by the Conference of the Parties, these adjustments then apply to all countries that are party to the Protocol without the need for a formal treaty amendment that would have to undergo the respective domestic ratification processes by states.

Justification of why this is needed

The main justification for an international mechanism to phase out chemicals of global concern is the reality of a globalised economy in which hazardous chemicals can be transported in materials all over the world and quickly become widespread, increasing the risk of long-term harm to the health of vulnerable communities as well as to the environment. It is worth noting once again how few hazardous chemicals are in fact regulated globally, due to the very particular criteria in place for bringing chemicals within the scope of the current chemicals conventions.

The phase-out or effective restriction of substances of global concern was highlighted as one of four strategic objectives for the sound management of chemicals and waste beyond 2020, in a Draft Thought-Starter on Objectives and Milestones submitted to the second Intersessional Process meeting as a work-in-progress document under internal discussion among the EU and its Member States.⁴⁷ The Draft Thought-Starter proposed several milestones under this strategic objective, including:

⁴⁵ Stockholm Convention, Art. 8.7 (a).

⁴⁶ Annex D of the Stockholm Convention sets forth four criteria for determining whether a chemical is ‘of global concern’: (1) persistence; (2) bioaccumulation; (3) potential for long-range environmental transport; and (4) adverse effects.

⁴⁷ EU thought-starter document from the second Intersessional Meeting in the SAICM post 2020 process, (<http://www.saicm.org/Portals/12/documents/meetings/IP2/Draft%20thoughtstarter%20on%20Objectives%20and%20Milestones%20-%20IP2.docx>).

- C1. By 20XX, hazardous substances, or groups of substances, of global concern have been identified and phased out or effectively restricted, at the national level, throughout the entire life cycle, including the waste stages, in ways that exposure of humans and the environment is prevented or minimised.*
- C2. By 20XX, highly hazardous pesticides are no longer in use, or are used in ways that prevent or minimise exposure of humans and the environment throughout their life cycle.*

Two areas of chemical usage particularly call out for a mechanism for deciding on global action with respect to certain high-risk chemicals and groups of chemicals:

- Highly hazardous chemicals in use for pest control
- Hazardous chemicals used in production in ways that result in exposure of workers and the environment and that may end up in products and end-of-life material waste streams, leading to further exposure.

a. Highly hazardous chemicals in use for pest control

According to the FAO, pesticides may be considered highly hazardous if they have high acute toxicity or known chronic toxic effects even at low levels of exposure, or if they are very persistent in the environment⁴⁸. The voluntary FAO/WHO International Code of Conduct on Pesticide Management acknowledges in its Article 7.5 that bans on the import, distribution, sale and purchase of HHPs are appropriate under certain circumstances.⁴⁹

The problems associated with highly hazardous pesticides (HHPs) have been debated within the SAICM process since the original 2006 SAICM texts. In 2012 at ICCM3, a resolution calling for the progressive ban of HHPs and their substitution with safer alternatives was supported by 65 countries and organisations. At the 2015 ICCM4, HHPs were formally acknowledged as an ‘issue of concern’.

The main document to emerge from SAICM on HHPs as an issue of concern is the Strategy to address highly hazardous pesticides.⁵⁰ Its suggestions for concerted action focus on awareness-raising, identification of HHPs, capacity-building to support Governments to strengthen regulatory controls and mainstreaming of alternatives. Nowhere does it acknowledge (as FAO does) that bans of certain HHPs may be appropriate.

As input into the Intersessional Process, the Pesticide Action Network has called for a global binding treaty on the life-cycle management of pesticides.⁵¹ Among its recommendations are that a framework should be developed for the banning and phasing-out of HHPs.

In 2017, the UN Special Rapporteur on the right to food, Hilal Elver, concluded that a binding treaty was needed to regulate hazardous pesticides throughout their life cycle, taking account of human

⁴⁸ “Highly hazardous pesticides means pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as WHO or GHS or their listing in relevant binding international agreements or conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous.” FAO, Article 2, International Code of Conduct on Pesticide Management.

⁴⁹ “Prohibition of the importation, distribution, sale and purchase of highly hazardous pesticides may be considered if based on risk assessment, risk mitigation measures or good marketing practices are insufficient to ensure that the product can be handled without unacceptable risk to humans and the environment”, Article 7.5, FAO Code of Conduct.

⁵⁰ Strategy to address highly hazardous chemicals in the context of the Strategic Approach to International Chemicals Management, (<http://www.saicm.org/Portals/12/Documents/EPI/HHP%20strategy%20English.pdf>).

⁵¹ Global Governance of Highly Hazardous Pesticides, Pesticide Action Network. (http://www.saicm.org/Portals/12/documents/meetings/IP2/IP_2_INF_8_PAN_Global_Governance_HHPs_f.pdf).

rights principles⁵². She recommended that “*such an instrument should:*

- a) *Aim to remove existing double standards among countries that are particularly detrimental to countries with weaker regulatory systems;*
- b) *Generate policies to reduce pesticide use worldwide and develop a framework for the banning and phasing-out of hazardous pesticides;*
- c) *Promote agroecology;*
- d) *Place strict liability on pesticide producers.”*

In 2015 an NGO report on the marketing and risk mitigation practices of two globally prominent pesticide manufacturers in the Punjab region of India documented numerous instances of lack of understanding of the toxicity of the pesticides being used as well as lack of protective equipment. The report concluded that highly hazardous substances could not be handled without unacceptable risks to human health and the environment. Their request that the FAO Panel of Experts recommend that HH pesticides be prohibited was disregarded.⁵³

According to the WHO, pesticides are considered responsible for some 200,000 acute poisoning deaths each year, almost all of which occur in developing countries with weaker health, safety and environment regulatory systems. In light of these figures, the need for a legally binding mechanism for phasing out highly hazardous pesticides is clear.

b. Hazardous chemicals used in manufacturing and in products

Here we refer to the many thousands of hazardous chemicals that are not within the scope of the Stockholm, Minamata or other current chemicals conventions that employ a lifecycle approach. These include, for example, the extremely persistent per- and polyfluoroalkyl substances (PFASs), toxic metals, and a multitude of industrial substances known or suspected of causing cancer, birth defects, impaired brain function, and other adverse health consequences.

In today’s global marketplace, a hazardous chemical introduced into a product will be transferred via the product to a customer in another part of the world. Solvents and other chemicals used in production may contaminate local communities where production takes place. At the product’s end-of life, the hazardous chemical may end up as part of a contaminated waste stream recycled into other materials and products or disposed of in yet another part of the world. The result: a contaminated waste stream, and exposures at each stage of the chemical’s life cycle, such that the exposure to the hazardous chemical becomes a global concern.

The use of hazardous chemicals in global supply chains is linked today to another trend: the transfer of hazardous chemical production from OECD countries to countries with less developed systems of regulatory controls. Their use in industrial applications and consumer products is generating a host of problems, including the exploitation of low-paid workers for profit, and heedless exposure of vulnerable communities living near industrial sites.

These trends create significant difficulties in international efforts to ensure consumer products are safe and produced ethically. They also undercut the global goal of a circular economy, as per SDG targets 12.4 (“By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle...”) and 12.5 (“By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse”).

⁵² *Pesticides: Report of the Special Rapporteur on the justiciability of the right to food and barriers to accessing justice* (A/HRC/34/48), (http://ap.ohchr.org/documents/dpage_e.aspx?si=A/HRC/34/48).

⁵³ European Center for Constitutional & Human Rights et al. (2015). *Ad Hoc Monitoring Report: Claims of (non-) adherence by Bayer CropScience and Syngenta to the Code of Conduct Provisions on Labeling, Personal Protective Equipment, Training, and Monitoring*, (https://www.ecchr.eu/fileadmin/Juristische_Dokumente/Ad_Hoc_Monitoring_Report_Final.pdf).

Chemicals in products (CiP) has been an emerging policy issue under the SAICM agenda since 2009. The CiP Programme has played an important role in drawing global attention to the need to share information on the presence of hazardous chemicals in products. However, hazardous chemicals continue to be found in consumer products around the world.

A circular economy is premised on using resources in a more sustainable fashion, by partly decoupling manufacturing from extraction and production of primary resources/raw materials, using the least hazardous auxiliary and finishing chemicals, or non-chemical alternatives. It calls for greater recycling and reuse of material flows, with the aim of helping society to save energy, reduce greenhouse gas emissions, and get maximum gain from the materials in existing products as well as additional raw materials. In order to avoid a hazardous circular economy, it will be vital to keep chemicals of concern out of material flows.

A critical step towards achieving a safe, i.e., non-hazardous, circular economy globally is therefore to put in place a global mechanism for setting in place bans or restrictions on substances of global concern.

The Globally Harmonized System of Classification (GHS) discussed earlier forms a starting point for identifying chemicals that might be of global concern. However, the GHS system has focused mostly on physical hazards and health toxicity and remains incomplete. International agreement is still difficult to reach concerning environmental toxicity, with only two categories agreed in this area so far: Hazardous to Aquatic Environment (Acute/Chronic) and Hazardous to the Ozone Layer. Other characteristics of chemicals that are considered to pose dangers to health and the environment -- such as endocrine disruption, persistence, bioaccumulability and mobility – are not part of GHS (though persistence and bioaccumulability criteria are part of the Stockholm Convention).

The SAICM programme on Chemicals in Products (CiP) has a broader scope in that it prioritises chemicals which are persistent, bioaccumulative and toxic, very persistent and very bioaccumulative, carcinogens or mutagens or which adversely affect the reproductive, endocrine, immune or nervous systems.⁵⁴ The Guidance Document⁵⁵ for the CiP Programme provides a number of chemical hazard lists in its Table 2, including *inter alia* the EU candidate list.

The European Union's candidate list now includes 191 substances. It is drawn up on the basis of the REACH criteria for substances of very high concern (SVHC). These criteria, found in Article 57 of the REACH Regulation⁵⁶, include most of the CiP list of characteristics to given priority, as noted above.

⁵⁴ Section II.B - Chemical scope, (http://www.saicm.org/Portals/12/Documents/EPI/CiP%20programme%20October2015_Final.pdf).

⁵⁵ Chemicals in Products Guidance Document , (http://www.saicm.org/Portals/12/Documents/EPI/Guidance%20for%20Stakeholder%20in%20Exchanging%20CiP%20Information_October2015.pdf).

⁵⁶ Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. ('REACH Regulation'), O.J. 396, 30.12.2006, p. 1.

REACH, Article 57 criteria for identifying SVHCs

- a. carcinogenicity category 1A or 1B under GHS
- b. germ cell mutagenicity category 1A or 1B under GHS
- c. reproductive toxicity category 1A or 1B, adverse effects on sexual function and fertility or on development under GHS
- d. persistent, bioaccumulative and toxic
- e. very persistent and very bioaccumulative
- f. substances with endocrine disrupting properties
- g. PBT or vPvB substances which do not fulfill the criteria for (d) or (e) but give rise to an equivalent level of concern

The EU SVHC criteria for carcinogenicity, mutagenicity and reproductive toxicity are based on the GHS system. Together with the remaining criteria for PBT, vPvB, EDCs and other substances of equivalent concern, the EU SVHC criteria would form a more complete foundation for identifying chemicals of global concern than the GHS criteria by themselves. Other important inputs into a post 2020 mechanism for identifying chemicals of global concern could include the SIN (Substitute It Now!) list⁵⁷ from the International Chemical Secretariat, which covers 31 groupings of substances considered likely to become restricted under EU legislation in the future.

In line with recommendations in the CiP Programme Guidance Document, the Swedish Society for Nature Conservation and European Environment Bureau (EEB) have suggested a legally binding component for the post 2020 chemicals and waste management framework that would require full transparency on the contents of any product containing chemicals of very high concern and restrict the most hazardous chemicals, based on existing chemical hazard lists, such as the SIN list.⁵⁸ The SIN list is based on SVHC criteria.

However, even the expanded criteria for SVHCs may not be enough for addressing all substances of potential concern. Some scientists argue that extreme persistence, such as with respect to the per- and polyfluoroalkyl substances (PFASs), should be a sufficient basis for regulating a chemical in order to prevent poorly reversible future impacts.⁵⁹

Benefits and challenges

The effectiveness of a phase-out for reducing risk of harm from chemicals (in this case, a group of chemicals) has been amply demonstrated by the success of the Montreal Protocol. The Stockholm Convention is another example of an international instrument able to implement phase-outs of chemicals considered to present a global risk. However, as mentioned earlier, these two instruments cover only a fraction of the chemical substances currently in use.

The Rotterdam Convention was intended to fill gaps in information on chemical hazards. By establishing a system for sharing information on pesticides and industrial chemicals severely restricted or banned by more than one government, it aimed to enable other Governments to set in place national controls for protection of health and environment. However, it only requires information sharing on a chemical's intrinsic hazards and related risks. The convention does not require any risk reduction measures or assist States with limited capacity to adopt and implement controls. For these reasons, as well as the consistent opposition against listing of restricted substances by stakeholders with strong

⁵⁷Substitute it Now List (<http://sinlist.chemsec.org/>).

⁵⁸ Input by the Swedish Society for Nature Conservation and the European Environmental Bureau to the SAICM post 2020 process, (<http://www.saicm.org/Portals/12/Documents/IP-consultation/Jul-Sep-2017/EEB-SSNC.pdf>).

⁵⁹ Cousins, I., Ng, C.A., Wang, Z., and Scheringer, M. (2018). Why is High Persistence Alone a Major Cause of Concern?, (https://chemrxiv.org/articles/Why_is_High_Persistence_Alone_a_Major_Cause_of_Concern_/7299992).

interests in maintaining the status quo, it has failed to live up to its promise. Moreover, its information sharing regime is only for chemical substances and mixtures; it does not cover a severely restricted or banned substance that may already be present in an article.

An international mechanism addressing chemicals of global concern would lead to efficiencies of scale because it would avoid the necessity of each country/region having to carry out its own risk assessment per chemical or group of chemicals of global concern. This would save money for countries with limited financial means. Moreover, it would also overcome other problems faced by many countries seeking to drive national changes, such as a lack of independent regulatory and judicial authorities and limited civil society. It would also lead to harmonised outcomes across regions, which would be beneficial for cross-border trade.

A legally binding mechanism for restricting chemicals of global concern would not limit more ambitious countries wishing a higher level of protection. Countries would be obliged to set in place measures to implement the restrictions on chemicals listed as of global concern in the treaty, but they would also have flexibility to determine if additional chemicals were considered of national concern and to set in place additional national risk reduction measures such as restrictions or bans in their national action plans. This could be a bottom-up mechanism for building support for listing additional chemicals of global concern within the treaty.

One argument against the proposed legally binding mechanism would be the cost of operating such a structure and the difficulties that might arise in identifying and restricting chemicals of global concern for global action. For example, efforts to add additional chemicals to the information sharing mechanism of the Rotterdam Convention have met opposition from governments seeking to protect chemical producers within their borders. On the other hand, it would help create a level playing field for all companies operating in the global marketplace, and therefore might have the support of some industry members.

An alliance with the WHO and health advocates similar to the collaboration that resulted in the Framework Convention on Tobacco Control might be helpful. It is important to note that the FCTC excludes the participation of the tobacco industry for engaging in some of the behavior that certain toxic chemical manufacturers have engaged in, particularly involving the manufacture of doubt to obfuscate risks.

4.1.4 Transparency obligations to ensure a safe circular economy

The post-2020 framework for the sound management of chemicals and waste should include obligations on state parties to ensure that producers and manufacturers disclose information on chemicals hazardous to human health and the environment, which are used during manufacturing, are present in products, as well as in material waste streams - at a minimum on chemicals of global concern and chemicals regulated by existing conventions.

Explanation

Chemical producers and companies using chemicals in the manufacture of products should be legally obliged to provide information to all stakeholders on the intrinsic hazards to human health and the environment posed by the chemicals they are producing and using for each constituent component of a product. This information should be made available in formats appropriate to the stakeholders concerned, including downstream users, workers, affected communities, government regulators, consumers and other stakeholders.

At a minimum, this transparency obligation should cover all chemicals considered of global concern, including chemicals already regulated under the Stockholm, Rotterdam and Minamata Conventions as

well as additional chemicals designated through the mechanism discussed in the previous section. But the countries negotiating the post 2020 chemicals and waste management framework might consider extending the scope to also consider additional chemicals, such as all chemicals classified as hazardous using GHS criteria.

In discussions concerning how to achieve a global circular economy, suggestions have included a system that would document ALL chemicals used in the manufacturing of products -- intermediate chemicals as well as those present in the finished product or article or article component – and for this information to accompany the product or article from the time of manufacture through to end-of-product life and its subsequent recycling into a material waste stream.⁶⁰ This would enable tracking of all chemicals, including any that were not regulated at the time of manufacture, but which may subsequently become regulated during the product's life span or at end of product life, to avoid the regulated chemical from reentering a recycled material flow.

Under the Globally Harmonized System of Classification and Labelling, information about a hazardous substance is to be transmitted from the chemical's producer to downstream users via a Safety Data Sheet (SDS). The SDS is aimed primarily at informing the downstream user of the hazards of a chemical substance or mixture and to provide advice on safety precautions to ensure safe use of the chemical. It is an important tool for management of chemicals in the workplace.

Once the hazardous substance is used in products, with a few exemptions, there is no transmission of information on the substance to downstream users. In the EU, Article 33(1) of the REACH Regulation requires suppliers of products containing any substances of very high concern (SVHCs) in concentrations equal to or exceeding 0.1% (weight/weight in each component) to provide the recipient of the article with enough information to enable safe use, including the name of the substance.

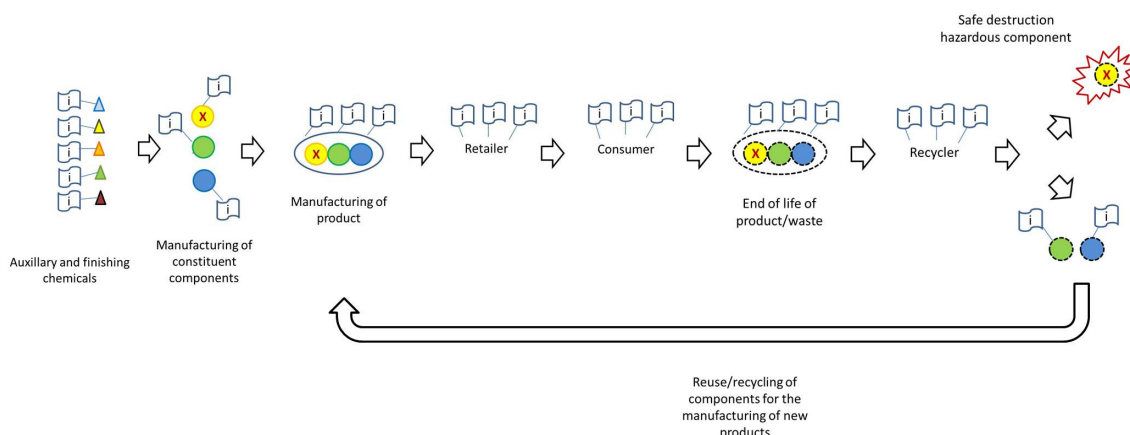
Justification of why this obligation is needed

Paragraph 15(b) of the Overarching Policy Strategy underpinning SAICM sets forth the objective of ensuring, for all stakeholders, *“that information on chemicals throughout their life cycle, including, where appropriate, chemicals in products, is available, accessible, user friendly, adequate and appropriate to the needs of all stakeholders. Appropriate types of information include their effects on human health and the environment, their intrinsic properties, their potential uses, their protective measures and regulation”*. The CiP Programme underlines this objective and specifically declares: “Information on chemicals relating to the health and safety of humans and the environment should not be regarded as confidential”.

Even the chemicals legislation of the European Union – arguably the most advanced system in the world today for regulating chemicals and waste – has significant gaps in its regime concerning chemicals in consumer products, particularly imported products. Contamination of waste and of products made from waste products is not due only to "legacy substances" now subject to restrictions and remaining in waste streams. As already explained, there may be substances used in products and ending up in material waste streams today that will be identified as substances of concern in the future. A first and necessary step is to as a minimum require transparency for chemicals of global concern and those regulated by existing conventions that cannot be immediately phased out but are restricted according to the proposed treaty.

⁶⁰ European Environment Bureau (February 2018). Letter to the Ministers of the Environment Council. (http://files.chemicalwatch.com/EEB_letter_ENVI_Council_5March2018_interface.pdf).

Example of a chemicals labelling system



Explanation: Chemicals (“triangles”) are tagged* with information (“i”) on their identity. Chemicals of global concern (“X”) are highlighted in the tags. This information is passed to the manufacturer of the component via the tag, and then to the manufacturer of the complete product, so that it can make informed choices about which components to use. If additional chemicals are used in the manufacturing processes, it should be the responsibility of the manufacturers to tag this new information to the components/products. The information is passed in turn to the retailer, to ensure safe handling of the product, and then to the consumer. This helps the consumer to make informed choices on whether to buy the product, as well as how to handle the product if it is broken or when it reaches its end of life and may have to be discarded in a specific way, to ensure that the chemicals of global concern in it are not spread in an uncontrolled way.

The information is also crucial to the recycler, so that it can handle and dismantle the discarded product in a safe way and make an informed decision on how to separate and safely destruct the component with chemicals of global concern. The remaining components, still with the information tagged, can safely be reused/recycled. If additional chemicals are used in the recycling process, it should be the responsibility of the recycler to tag this new information to the material stream sent back to the manufacturer of new products.

*A tag in this case could, for example, be a SDS, bar code, Quick Response (QR) code, or a chip.

It is particularly important to make sure that information about chemicals of global concern and those regulated in conventions is available to stakeholders in developing countries and countries with economies in transition, where regulatory requirements may be in place, but enforcement is sporadic, and where there are also large informal recycling economies with inadequate occupational safety. Because stakeholders in these countries may have lower levels of knowledge concerning chemicals in products throughout the product life cycle, producers and manufacturers should be specifically obliged to provide user-friendly information appropriate to the various stakeholders concerned.

Benefits and challenges

A safe circular economy will eventually require full transparency on hazardous chemicals in products and material waste streams, in order to avoid use of contaminated materials in products that would lead to consumer exposure and the possibility of adverse impacts on humans and the environment. At this point such a vision might be considered unrealistic, but it is a goal worth keeping in mind. In particular, a number of technical challenges would need to be solved in order to move forward on a globally reliable system. Enforcement at local, national and global levels would be critical, in order to control opportunities for gaming the system.

For certain industries, the legally binding obligation to transmit information on hazardous chemicals in

products including article components may not be sufficient for safe use or for building product brand value. So flexibility could remain for stakeholders to shape their own systems for labelling and tracking chemicals in and outside of the supply chain, in addition to legally binding obligations. The SAICM CiP programme recognises that specification of details concerning chemicals used and exchange of best practice may be sector-specific. The CiP *Guidance for stakeholders on exchanging chemicals in products information* provides numerous examples of systems already in place to share information within supply chains⁶¹.

This could satisfy the need for some industries, particularly brand names, to have more certainty that the materials in their products are free of contamination. Conversely, such systems might also provide a means to ensure downstream users and consumers that only materials free from hazardous chemicals were used during the manufacture of the product. The ability to attest to contaminant-free recycled materials could be a market advantage for certain manufacturers.

4.2 ELEMENTS THAT CAN REMAIN FLEXIBLE (EXAMPLES)

4.2.1 National goals and targets beyond the international obligations

As described above, the so-called “hybrid” option would obligate States to have national systems for risk reduction in place and to develop a national action plan (NAP) in which States themselves identify what steps will be taken during a fixed time period to improve national systems for ensuring chemical safety, based on the eleven basic elements of the OOG.

This hybrid approach would give States the flexibility to improve their systems to address the risks more pressing in their jurisdiction, whether industrial or agricultural or both. They would set their own timelines for establishing and improving systems and for transitioning away from chemicals of concern, but bearing in mind and perhaps modifying those systems based on the recommendations provided through the above-mentioned periodic review.

This flexibility would ensure and encourage the participation of all States, irrespective of their level of chemicals control at present. Nationally developed plans would reduce concerns over national sovereignty. Consistent with the participatory approach of SAICM, the role of civil society should be preserved in the development, implementation (to some degree) and monitoring of the NAP.

4.2.2 Framework for emerging issues and policy approaches

Explanation

The post-2020 framework for chemicals and waste management should include a structure for discussions on emerging policy issues and approaches. While a number of substances are unquestionably hazardous and warrant risk reduction measures, other issues are more complex and may benefit from a broader discussion on the science, relevance to the international community and various approaches being employed.

Justification of why this is needed

One of the positive aspects of the Intergovernmental Forum on Chemical Safety (IFCS) and SAICM has been to enhance global knowledge on issues of concern, such as nanomaterials, EDCs and per/poly-fluorinated substances. To a degree, these forums have served as incubator on these and other

⁶¹ Chemicals in Products Programme guidance document (http://www.saicm.org/Portals/12/Documents/EPI/Guidance%20for%20Stakeholder%20in%20Exchanging%20CiP%20Information_October2015.pdf).

issues of emerging concern, helping to accelerate global knowledge sharing in hopes of risk mitigation measures and the implementation of a precautionary approach globally.

This policy space can serve to prepare all countries to take action either nationally or internationally on such substances (or classes of substances) of concern. It can also serve to share experiences of novel approaches to chemical safety, including the availability and adoption of safer alternatives.

Furthermore, the knowledge and approaches for mitigation of risks come from industrialised countries. Ensuring a global policy space for discussions of such issues can help to address the long-standing problem of unscrupulous actors accelerate the international transfer issues of emerging concern, to exploit knowledge gaps and regulatory systems that lag behind industrialised countries.

Benefits and challenges

While global obligations are appropriate for the multitude of substances with clear hazard profiles and evidence of harm, evidence continues to grow of individual substances and classes of substances that require precaution and increasing attention at the global level. In some States, novel approaches are being developed to deal with the complexity of these risks.

At some stage, strong national and international risk reduction measures are likely to be required for emerging issues. However, it is unlikely that for certain substances and issues that States would be prepared to move toward bans or restrictions in an expeditious manner.

Thus a voluntary approach, similar to SAICM, to address emerging policy issues and approaches would be most prudent. In between the emergence of evidence until the science appears reasonably established of risks, a non-binding policy space could help to ensure all stakeholders participate in discussions and help to build consensus toward international measures, if and when they may be required.

4.2.3 Encouragement for sustainable alternatives

The post-2020 framework for chemicals and waste management should provide encouragement and support for all stakeholders to change practices so as to use non-toxic alternatives wherever possible. This could be part of the flexible international multi-stakeholder framework for emerging issues and policy approaches already discussed above.

Explanation

One of the core elements in the OOGD is “Development and promotion of environmentally sound and safer alternatives”. In this vein, the post-2020 framework for chemicals and waste management should include measures for encouraging users of hazardous chemicals and especially users of chemicals of global concern to phase out those uses in favour of non-chemical alternatives.

The measures could range from support for education, training and research on non-toxic alternatives, to national measures intended to discourage chemicals use or to internalise costs of adverse effects, such as Denmark’s tax on pesticides and Sweden’s tax on flame retardants in products. A new focus on sustainable alternatives is particularly needed in two areas of chemical use:

a. Agro-ecology as the alternative to highly hazardous pesticides

When the ICCM4 formally recognised highly hazardous pesticides as an issue of concern, it

recommended that emphasis be given to promoting agro-ecologically-based alternatives⁶². This recommendation is in line with the findings of the UN-led International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) in 2008, which concluded that agro-ecology was one of the most robust approaches available for reducing harm from hazardous pesticides and for bringing about more equitable and sustainable development.

The Strategy to address HHPs⁶³ adopted at the ICCM4 noted that farmers' organisations and networks had deep knowledge of integrated pest management based on agro-ecological approaches, and that sharing this knowledge could help to ensure that non-chemical alternatives are given priority in efforts to phase out HHPs. Accordingly, the post 2020 framework for chemicals and waste management could explore ways to enhance support for stakeholders to make optimal use of agro-ecological approaches and to reduce reliance on chemicals for pest control.

b. Avoidance or minimisation of use of hazardous chemicals in consumer products

The Overarching Policy Strategy for the launch of SAICM in 2006 (paragraph 14) calls for support for "the development and implementation of, and further innovation in, environmentally sound and safer alternatives, including cleaner production, informed substitution of chemicals of particular concern, and non-chemical alternatives." This call is repeated in the documents introducing the Chemicals in Products (CiP) Programme under SAICM..⁶⁴

To make these goals more concrete, the post-2020 framework for chemicals and waste management should encourage countries to take nationally appropriate measures to restrict consumer products containing hazardous substances and reward environmentally-sound products. Encouraging countries to take a two-pronged approach – targeting both the supply of products and consumer demand for products – can help build the effectiveness of measures.

On the supply side, measures restricting the substances used in products should be pursued. These measures can include product standards and ecodesign requirements that require producers to consider the avoidance, minimisation and substitution of hazardous substances in the production of products during the design phase. On the demand side, improved product information for consumers through, for example, product labels can also reward safer products by building consumer demand. Product information measures can also support the improved traceability of hazardous substances throughout a product's lifecycle. Other measures, such as criteria for green public procurement based on the chemical safety of products, can also help build markets for safer products.

The EU approach to improving the energy performance of consumer products may be a model to be explored regarding quantifying the toxic substances in products and their lifecycle. Under this approach, the Ecodesign Directive removes worst-performing products from the market through design requirements set out in product standards (implementing measures), while the Energy Labelling Directive helps build consumer demand for the best-performing products through a label signalling the energy efficiency of products.

Justification of why this is needed

The preferred option in the area of pest control or in product manufacturing should be on avoidance or minimisation of hazardous chemical use, use of non-chemical alternatives, or substitution by the least hazardous chemical alternatives when no non-chemical alternatives are available or unsuitable for a

⁶² UNEP, 2015. Report of the International Conference on Chemicals Management on the work of its fourth session, Annex I, p. 47, (http://www.saicm.org/Portals/12/documents/meetings/ICCM4/doc/K1606013_e.pdf).

⁶³ UNEP, 2015. Strategy to address highly hazardous pesticides in the context of the Strategic Approach to International Chemicals Management, (<http://www.saicm.org/Portals/12/documents/meetings/ICCM4/doc/K1502177%20SAICM-ICCM4-8-e.pdf>).

⁶⁴ Chemicals in Products Programme, (<http://www.saicm.org/Portals/12/documents/meetings/ICCM4/doc/K1502319%20SAICM-ICCM4-10-e.pdf>).

specific application.

Benefits/challenges

Discouraging the inclusion of hazardous substances in consumer products is a critical step to prevent these substances from entering the economy. This helps to protect the health of consumers and the environment and progressively removes hazardous substances from waste streams, thereby building the market for secondary materials.

Designing measures to restrict market access for harmful products can be challenging. Developing products standards and ensuring conformity assessment infrastructure can be resource-intensive and time-consuming, and requires a high-degree of technical capacity within authorities. Nonetheless, most countries have product safety regimes in place that could be built upon to include restrictions on hazardous substances.

4.3 OTHER ELEMENTS

4.3.1 Independent scientific body to review evidence and science, especially health impacts

Explanation

Independent scientific bodies are often established under international agreements to review evidence and provide technical advice or recommendations. The role, composition, and function of scientific bodies can vary widely. Scientific bodies may be *ad hoc* or permanent, and may operate under the direction of the governing body as a subsidiary body, or independently.

The post-2020 framework for chemicals and waste management could benefit from an independent scientific body to serve as a barometer of impacts from toxic exposures and the level of progress made, providing a credible assessment of the global state of affairs and trends regarding the impacts of toxic chemicals on human health and the environment. A Global Panel on Chemicals and Waste (GPCH) would be external to the treaty. Its reports could inform the various aspects of the post-2020 framework for chemicals and waste management.

The role of the GPCH would be to provide authoritative information on the impacts of toxic exposures on health to help elevate the priority of the issues and drive progress at national, regional and global levels. Such a scientific body may also encourage scientific advancements in evaluating chemical hazards, exposures, uses, and alternatives. Available information generated through the EU's REACH and other national or regional measures (such as PRTRs), as well as peer-reviewed, independent, and science-based research could form the basis of the GPCH's assessments on health and environment. The GPCH's function as an advisory body would also enable better use of epidemiological data to drive prevention and precaution, including adverse health trends that point to environmental factors but lack clear evidence of which substances are to blame.

The GPCH could issue recommendations that may have bearing on either or both the policy framework and the mechanism for restrictions/bans, without directly influencing the activities of either, which would be determined by States. This body could provide scientific guidance and recommendations for the suite of issues, emerging or otherwise, to be considered by the voluntary structure for policy discussion suggested above. It may also facilitate the categorisation, coordination, and synergy between issues that are urgent, mature, and well-characterised (and thus ready for bans/restrictions), versus those that are truly more emerging in nature. This could create the much needed "off-ramp" for existing emerging policy issues, such as lead-in-paint, per-fluorinated substances and highly hazardous pesticides that are sufficiently well characterised to warrant global restrictions and bans.

Maintaining SAICM's participatory nature, government participants, NGOs, and civil society could propose particular issues or trends for detailed assessments. The GPCH would not assess whether chemicals meet relevant criteria for listing under Stockholm or Rotterdam conventions or the envisioned mechanism for global bans or restrictions in the post-2020 framework for chemicals and waste management.

The GPCH should be comprised of independent scientists with appropriate safeguards to ensure the credibility of its findings, divorced from political interference. It would be necessary to look at the experience of other scientific bodies in international environmental law, public health and other relevant international institutions, to see what lessons could be learned to avoid extending the delay between the emergence of new scientific knowledge and its integration at the policy level.

Justification of why this is needed

Scientific bodies are useful in both raising public awareness of a particular environmental challenge, and also for helping to create political will to address the challenge.

The current ICCM does not have a review process in place to report on the efficacy of SAICM as a whole in achieving its stated objective, the sound management of chemicals throughout their lifecycle by 2020. In contrast, the Scientific Assessment Panel under the Montreal Protocol produces a report every four years documenting the state of the ozone layer, based on contributions from an ad hoc steering group of international researchers.⁶⁵ Similarly, the Intergovernmental Panel on Climate Change (IPCC) provides scientific assessment of the dangers presented the continued emission of unsafe levels of greenhouse gases.⁶⁶ As repeatedly demonstrated, the IPCC has proven invaluable in assessing the adequacy of measures to combat climate change, thereby helping to raise national and global ambition.

If an international body was charged with providing credible scientific information on progress toward sound management of chemicals globally, with timely updates and without using the lack of full scientific certainty for delay, it could serve as a powerful barometer of effectiveness of overall activities towards chemical safety at the global level.

Benefits and challenges

The proposed scientific body would help to provide States and the international community a comprehensive overview of the health impacts of toxic exposures, as well as key information gaps to close, which is sorely lacking. This information could help to improve the limited public awareness of toxic exposures, and to thus drive political will to increase action towards a healthy environment.

While this initiative would require financial resources, it could build off various existing bodies and processes or create a coordinating network to minimise the additional resources that would be required.

There is a challenge in all scientific bodies of ensuring that the composition is sufficiently independent, and the resulting recommendations are clear and useful for policy and decision-makers at national and international levels. The experiences of other scientific bodies, in particular the IPCC, may help to mitigate the risk of a body that is not sufficiently independent. There is also a risk that disagreements between the scientists participating may hinder the effectiveness of the body. However, in the case of various toxic exposures the evidence of impacts is well established and thus the potential for delay on these substances of concern would be less likely.

⁶⁵ Ozone Secretariat, Scientific Assessment Panel (http://ozone.unep.org/Assessment_Panels/SAP/).

⁶⁶ IPCC (<http://www.ipcc.ch/>).

4.3.2 Regional bodies for chemicals management/enforcement

Explanation

States may find it useful or perhaps even necessary to have in parallel many of the basic elements of an effective national system at the regional level. For example, States can and arguably should have regional information sharing networks on chemical hazards and risks and systems for cooperating on trans-boundary movements (including illegal trade). States may also wish to have regional cooperation on risk assessments and technical capacities for monitoring water, soil and air for contamination

Justification

Given the limited resources for developing countries, even with the cost-recovery systems discussed below, regional cooperation is important. With respect to information sharing, risk assessments and management, regional mechanisms may be more effective and/or efficient than national measures. For example, the regional systems of the European Union under REACH helped reduce the burden of chemicals management on individual Member States.

Benefits and challenges

As mentioned above, there are potential efficiencies to be gained from regional cooperation bodies. In the case of low- and middle-income countries this is would be of considerable value in creating economies of scale and reducing inefficiencies. However, there is the challenge of the ensuring that resources are available for creating effective regional coordinating bodies and institutions in developing countries. Financial resources from the international community could help to enable the initiation of regional bodies, while national cost-recovery systems are being developed, which would then enable national contributions from regional members. Furthermore, existing regional centres for the chemicals and waste Conventions might be a foundation for expansion to more comprehensive regional coordination bodies.

5 COSTS AND OPTIONS FOR FINANCING

One of the obstacles to moving forward with a new legally binding initiative in the area of chemicals and wastes is the challenge of how to finance the governance measures needed on national and international level for the safe management of chemicals and waste.

It should be noted that there are existing financing channels at the international level. Besides ad-hoc contributions from donor countries, there are bilateral development assistance as well as funding from multilateral institutions. The Global Environment Fund (GEF) services much of the financing needs of the chemicals and wastes cluster. Under the recently concluded 7th replenishment for 2018-2022, approximately 500 million USD (15% of the total replenishment budget) was allocated to the GEF's Chemicals and Waste Focal Area.

Regarding SAICM, GEF-7 supports specific SAICM priorities. The Chemicals and Waste Focal Area will support the objectives of the Strategic Approach to International Chemicals Management, specifically in supporting the global phase out of the manufacture of lead based paint, building capacity for management and disposal of e-waste, elimination of chemicals of global concern from the supply chain of commercial and domestic products and support to countries to control and prevent the unsafe use and disposal of highly hazardous pesticides. Funding for these activities would extend through 2022.

However, more financial resources would be required to help negotiate and implement the elements proposed in this report nationally and internationally. There are various options for how these resources could be mobilised.

One potential starting point is the proposal by UNEP's Executive Director of 2012 ("UNEP Proposal").⁶⁷ This more conceptual proposal is supplemented by the LIRA guidance of 2015 which sets out more concrete options in particular for cost recovery systems at the domestic level. It describes measures that governments can take at domestic level to recover their implementation costs, in particular from industry. Implementation of such measures offers the governments of even low-income countries the opportunity to mobilise new sources of income through effective cost recovery systems.

However, there is a difference between guidance setting out the various options for e.g. costs-recovery systems and imposing international *legal obligations* on states to establish or implement specific cost-recovery measures. From the experience of existing treaties, it seems unrealistic to agree on and impose detailed legal obligations. It has to be taken into account that states have different national circumstances and a one-size-fits-all approach might be as unsuitable as an unclear general obligation to have "a cost recovery system". However, in addition to international financing channels, the post-2020 chemicals and waste management framework should highlight the potential of costs-recovery systems generally and encourage all parties to establish them for financing safe chemicals management. This can be achieved at the level of concrete drafting.

The following section follows the structure above and addresses financing issues and options for each of the elements proposed. The Annex provides further background on financing issues under international law and existing international financing channels and funds.

⁶⁷ UNEP doc. UNEP/GC.27/7 of 11 December 2012. See Annex.

5.1 THE LEGALLY BINDING ELEMENTS

5.1.1 Negotiation of a treaty

The costs of negotiating the treaty part of the new framework include mainly the logistics, i.e. the costs for the negotiating venue and supporting secretariat, and the costs for each country of participating in the negotiations. With regard to who bears the costs of the conference centre, logistics etc, this would depend on who mandates the negotiations. The costs are often at least partly borne by the UN, sometimes with contributions from the country hosting the conference. The costs for participating are normally borne by each country. However, there is usually funding available for developing countries for a certain number of delegates. Since treaty negotiations can take several rounds over several years, the costs could add up over time.

5.1.1 Having the treaty structure in place

Since binding elements require a treaty in some form, it would make sense for the treaty to establish a structure with permanent treaty bodies such as, at a minimum, a COP that meets regularly, and a Secretariat. This is standard in modern treaties. This involves operational costs in the same way that existing environmental treaties have such costs, mainly for the staff and offices of the Secretariat and for organising the COPs and other meetings. Normally the treaty would include provisions about parties periodically agreeing on and setting its budget. The budget is usually paid for by assessed contributions from parties. Often the country hosting the Secretariat commits to substantial contributions over and above what its assessed contributions would be.

The three existing chemicals conventions have in recent years established procedures and structures that create synergies, e.g. by holding simultaneous or joint COPs, and by a matrix-based organisation of the secretariats with a single Executive Secretary. A new post-2020 framework for chemicals and waste management that includes binding elements, or in entirety is treaty-based, might be able to link to and join the existing structure for the chemical conventions and thereby keep down these costs. The current budget for the three chemicals conventions together for the biennium 2018-2019 is approximately USD 45 million, which however also includes providing support to parties for implementation.⁶⁸

5.1.2 National systems for ensuring chemical safety

National systems for ensuring chemical safety would be important opportunities for mainstreaming chemicals management, as mentioned above. Having a system in place would also be an important step for lower income countries seeking to unlock (additional) official development assistance.

However, in order to have that effect, parties would have to finance *establishing* these systems in the first place. This requires capacity at the national level, particularly administrative capacity, to *devise* the national system, i.e. to conceive, develop and adopt it. The same goes for a National Action Plan as part of that system. The next step is *implementing* that system and the NAP, which will require financing as well.

With regard to the first step, establishing a national system and NAP would be a state's obligation under a post 2020 framework for chemicals and waste management with binding elements. Funding capacity building and technical assistance for developing countries to fulfil this obligation would be a typical function for existing international financing channels, e.g. through a financial mechanism such as GEF, as well as through bilateral development assistance. The GEF's mandate already includes

⁶⁸ See Stockholm Convention decision SC-8/27.

financing chemicals and waste and now has one, fully integrated Chemicals and Waste Focal Area, including POPs, Mercury, Ozone Depleting Substances, and SAICM.⁶⁹ This includes supporting the global phase out of the manufacture of lead based paint, building capacity for management and disposal of e-waste, elimination of chemicals of global concern from the supply chain of commercial and domestic products and support to countries to control and prevent the unsafe use and disposal of highly hazardous pesticides.⁷⁰

This means that there already is a specific and well-established “external” international financing channel in place to assist developing countries. One obvious option would therefore be to designate GEF as a financial mechanism under the post 2020 chemicals and waste management framework. This does not necessarily mean that the amount of finance that is available would be sufficient. The current GEF-7 programming for 2019-2022 did not envisage specific obligations to have overarching national systems in place and to prepare NAPs.

These traditional international financing channels are not available for developed countries. They would be expected to find or create their own financing for devising national systems and preparing NAPs.

It is therefore essential both for developed and developing countries to find ways to recover at least some of the costs of establishing their national systems and NAPs. For developing countries, this would be in addition to seeking and obtaining potential international assistance.

The LIRA Guidance⁷¹ describes a variety of options for developing cost recovery mechanisms to build national and regional capacity, such as registration, manufacture, import and use fees to cover overall national governance of chemicals expenditures, as discussed further below. International support could also assist developing countries in devising their respective country-specific ways for cost recovery.

Mainstreaming is one track of financing options suggested by UNEP,⁷² but it is not a finance option as such. It describes actions that integrate chemicals management into other areas, which can help to use existing resources also for a new post-SAICM legally binding regime, and to unlock further resources, in particular at the national level.

5.1.3 Periodic review system: NAPs and reporting

The binding elements would not only include the obligation for parties to the treaty to prepare and periodically submit their (updated) NAPs and implementation reports. They would also include a mechanism by which the NAPs and the reports are reviewed and in some form discussed at the *international* level.

The financing required would depend on the details and modalities of how this process is carried out.

Financing would be required, e.g., to convene meetings of the periodic review, but options such as video conferencing may defray costs associated with in-person meetings of review teams. Costs for the review process under the treaty, such as the review teams and logistics, would normally be borne by the treaty budget.

⁶⁹ GEF doc GEF/A.6/05/Rev.01 of 27 June 2018, para 211.

⁷⁰ GEF doc GEF/A.6/05/Rev.01 of 27 June 2018, para 219.

⁷¹ UNEP (2015). *Guidance on the Development of Legal and Institutional Infrastructures and Measures for Recovering Costs of National Administration for Sound Management of Chemicals*.

⁷² #On mainstreaming policies and actions see UNEP paper on financing options.

Resources would also be required nationally to prepare the reports and to participate in the review, but could be included in financing for lower income countries through any international financial mechanism (e.g. GEF or otherwise). To further encourage reporting financial resources could be tied to submission of adequate periodic reports to the review process.

5.1.4 Mechanism to phase out chemicals of global concern

A legally binding mechanism (process) for reaching international decisions concerning whether to ban or restrict a chemical of global concern could entail significant costs. Both the Montreal Protocol and the Stockholm Convention rely on scientific review committees balanced across the UN geographic regions to evaluate the strength of the evidence concerning the need for a restriction or phase-out.

We assume that the final decision would be taken by the COP of the treaty for the mechanism, and that therefore the mechanism up to the decision on phasing out would at least partly be a mandate and process under the treaty. To that extent, the costs would be part of the regular business under the treaty and typically be part of the treaty budget. However, depending on the actual design of the process, the scientific groundwork for making the proposals and recommendations regarding the chemicals might create significant costs. For instance, scientific groundwork could be done by the independent scientific body proposed above, which then recommends the phase-out to the process under the treaty (see section 4.1.3). In that case the costs for this groundwork would normally have to be borne by that independent body's budget (see below).

Apart from the costs of arriving at the decision to phase out chemicals, costs will arise for parties for *implementing* the decision to phase out. These are implementation costs that the parties to the treaty will incur. They would typically include the administrative structures and capacity to enact and enforce the phase-out at the national level. This is the main area where implementing a costs recovery system would significantly contribute to financing the state's administrative and governance costs, so that the state does not have to bear these costs. As mentioned above, the post 2020 chemicals and waste management framework, should encourage parties to make use of options in this regard, as set out e.g. in the LIRA guidance. A significant part of the costs will be incurred by the chemical industry which would have to phase out the chemicals.

At the international level, developing countries could ask for financial and other support to meet these costs, similar to the costs for preparing devising NAPs (see above).

5.1.5 Transparency obligations to ensure a safe circular economy

An obligation on states to ensure that producers and manufacturers disclose information on hazardous chemicals (see section 4.1.4) entails administrative and governance costs for setting up, implementing and enforcing these rules. Depending on the supply chain, transparency systems could be based on industry-led systems. To that extent, the costs would basically accrue to the producers and manufacturers of materials and projects.

But even in that case a state would still have to administer and enforce the rules within its jurisdiction in order to fulfil their international obligation. As with a mechanism for phasing out chemicals, such costs could be covered to a significant extent by national cost recovery systems. External funding through international finance could help states in particular in designing and setting up the transparency systems, in light of national circumstances.

5.2 THE FLEXIBLE ELEMENTS

5.2.1 National goals and targets

These will be part of the basic obligation on Parties to set in place national systems for safe chemicals management. Each country would have the opportunity to gather information on the situation within its borders and to set its own national goals and targets, as a component of the national implementation plan. This cost would therefore be part of the cost of its overall chemicals management system, and presumably financed via its choice of cost recovery systems (see above on financing the national systems).

5.2.2 Framework for emerging issues and policy approaches

This policy space could be very similar to the existing SAICM, requiring similar levels of financing. However, the meetings would either be part of the regular business under any new post-2020 chemicals and waste management treaty, or they should be in conjunction with the other aspects of the post-2020 framework discussed herein, so the total costs of meetings would be less than the ICCM and intersessional efforts.

5.2.3 Encouragement for sustainable alternatives

As discussed above, it will be important for the post-2020 chemicals and waste management framework to provide support for stakeholders currently using hazardous chemicals to switch to sustainable, preferably non-chemical alternatives. This is conceptually similar to financing energy efficiency and renewable energy under climate change financing efforts.

For developing countries, the main source of financing would probably be bilateral funding in the form of development assistance (differentiated financing responsibilities). It would be important not to leave initiatives in this area solely to the chemical industry, in order to guard against the risk of industry capture.

5.3 INDEPENDENT SCIENTIFIC BODY

The establishment and ongoing operations of an independent scientific body would require some funding. This could range from being part of the post-2020 chemicals and waste management framework itself, or completely independent financing. Costs could be deferred through voluntary participation of experts in the process, supported by UN staff.

For instance, the International Panel on Climate Change (IPCC) has comparatively low running costs, mainly for its Secretariat and for logistics, while hundreds of scientists contribute to its scientific work on a voluntary basis. The budget has been roughly between CHF 8-10 million and is expected to be around CHF 8 million over the next few years. The activities of the IPCC have been funded mainly through voluntary contributions to a special IPCC Trust Fund from about 25 Member countries. However, donations have been declining and the IPCC projects a deficit over the next few years.⁷³

⁷³ IPCC (2017), IPCC Resource mobilisation brochure, (<http://www.ipcc.ch/>).

6 PATHS FOR GETTING THERE

On the basis that certain elements of a new post-2020 framework on chemicals and waste management should be binding under international law, this would require a treaty of some form. This treaty would have to be negotiated. There is no single standard way of starting negotiations on a new treaty. Usually states agree in a suitable forum on a mandate to start negotiations, possibly together with an initial timeline and process.

A new treaty could be a protocol to an existing treaty where that treaty provides for this option. In that case there is already a forum and the parties would decide under the treaty procedures to initiate negotiations for a protocol. The treaty might already determine certain elements of the process to be followed and the scope of the protocol.

A post-2020 framework treaty for chemicals and waste management could also be a standalone instrument. An obvious forum for agreeing to start negotiations on a new treaty would be the ICCM5. Other fora could be e.g. the UN General Assembly, UNEA or another international organisation with a strong interest in preventing harm from hazardous chemicals, such as the WHO. Each of these fora has its own procedures that would have to be followed, as well as its mandate which might direct or limit the scope of the new treaty from the start.

As mentioned at the beginning of this study, there is some momentum in other international processes for legally binding approaches to the related problems of plastic pollution and highly hazardous pesticides (HHPs). These issues overlap with, and are partly subsets of, the chemicals and waste management issues considered under SAICM. Rather than having these processes run in parallel and compete for political buy-in, it could be considered to link or even merge them.

However, the negotiating mandates differ, and it is likely to be politically difficult to simply add one issue to the other process, e.g. adding chemicals management to the negotiations on plastic pollution, or vice versa. It could therefore be worth considering bringing the various efforts to remove toxic chemicals in production and use under one overarching umbrella, such as the post-2020 framework for chemicals and waste management. The circular economy could provide a useful and suitable framing, under which toxic substances of global concern in production, including their use in products, materials, agriculture and other facets of the economic value chain, could be discussed and negotiated without the complications and substantive gaps emerging from narrowly defined treaties of chemicals and other issues of global concern.

ANNEX: BACKGROUND TO FINANCING OPTIONS

For financing options, one potential starting point is the proposal by UNEP's Executive Director ("UNEP Proposal").⁷⁴ The UNEP Proposal contains "three complementary and mutually reinforcing tracks":

- mainstreaming of the sound management of chemicals and wastes into development planning;
- industry involvement; and
- dedicated external financing.

This Annex explains how the three "tracks" in the UNEP Proposal would relate to a binding international framework. It should be noted that any provision in a new chemicals and waste management framework instrument can be formulated in a more or less prescriptive and precise manner, giving states more or less leeway and discretion in how to implement it.

The more conceptual UNEP Proposal is supplemented by the LIRA Guidance, which sets out and explains more concrete options available to states in particular with regard to cost recovery systems at the domestic level.

1. OPTIONS FOR MAINSTREAMING

Mainstreaming, the first track in the UNEP Proposal, is not as such a financing mechanism. The idea behind this option is that mainstreaming actions, such as alignment of regulation and other policy instruments, will contribute to the reshaping of national budgets and facilitate national and international financing.⁷⁵

From this perspective, the mainstreaming track is actually a policy issue: A post 2020 framework for chemicals and waste should require or provide incentives for states to implement policies on mainstreaming chemicals management, in order to facilitate and increase finance in this area. The UNEP Proposal lists a number of such actions.⁷⁶ Then next question is whether states need finance to do the mainstreaming.

2. OPTIONS FOR INDUSTRY INVOLVEMENT

The UNEP Proposal on financing options states that engagement of industry at *both the national and international levels* was required.⁷⁷

At the international level, obligations are usually directed at states⁷⁸ or other subjects of international law such as International Organisations. Apart from a few exceptions, international law does not impose obligations directly on private actors. The UNEP Proposal acknowledges this and accordingly states that industry can be "influenced" by international standards.⁷⁹

⁷⁴ UNEP doc. UNEP/GC.27/7 of 11 December 2012.

⁷⁵ UNEP doc. UNEP/GC.27/7 of 11 December 2012 para 22.

⁷⁶ UNEP doc. UNEP/GC.27/7 of 11 December 2012 para 20.

⁷⁷ UNEP doc. UNEP/GC.27/7 of 11 December 2012 para 25.

⁷⁸ References to „states“ should be read as including the EU unless otherwise stated.

⁷⁹ UNEP doc. UNEP/GC.27/7 of 11 December 2012 para 25.

If international law wanted to *require* private actors pay e.g. for pollution, this would normally involve two steps: First, international law would impose an obligation on *states* to require industry under their jurisdiction to pay. States would then fulfil this international obligation by e.g. imposing domestic laws that require those private actors to pay. For instance, international law might require states to make polluters liable for the remediation costs of pollution. Each state party would then have to fulfil this obligation in its respective jurisdiction, usually by adopting corresponding laws and ensuring implementation and compliance.

Similar to mainstreaming, involving industry is therefore more a policy issue than a finance issue. It is about states implementing policies that “engage” industry, for instance by providing economic incentives. As with mainstreaming, the question is to what extent international law requires or encourages states to adopt and implement certain policies that address industry in particular with regard to costs.

In theory, an international agreement on a new chemicals and waste management framework could provide a whole range of obligations on states to make industry under their jurisdiction pay costs associated with chemical management. At one end of the spectrum, a new global framework could be general and abstract and e.g. encourage states to “implement the polluter pays principle”. This would leave states considerable discretion and freedom with regard to how to do it and which concrete measures to take. At the other end, a global framework could require states to adopt and implement specific and clearly defined measures such as civil liability, taxes, economic incentives etc.

There have been suggestions that industry should pay a percentage of their turnover towards safe chemicals management. Addressing this at the international level would require a two-step process: First, the binding elements of new post-2020 global framework for chemicals and waste management, or if the framework itself is a treaty, would require or encourage *parties* to require industry to pay, e.g. via a tax or levy. Second, states would act upon this obligation or encouragement and implement rules to that effect in their national jurisdictions.

In addition, measures such as due diligence, corporate reporting obligations and reputational measures can influence industry conduct.⁸⁰

Since most states are members of the WTO, any state action would have to be in conformity with WTO rules, notably on non-discrimination.

3. OPTIONS FOR EXTERNAL FINANCING

Most existing mechanisms at the international level would fall under the UNEP’s third track, i.e. external financing. Exceptions include for instance the special funding model for the Adaptation Fund under the Kyoto Protocol, the oil pollution compensation fund and mandatory insurance for nuclear accidents.

The main options suggested by the UNEP Proposal for external financing include:

- Institutional strengthening;
- An integrated chemicals and wastes focal area under the Global Environment Facility (GEF); and
- A special programme fund for chemicals and wastes.⁸¹

⁸⁰ For other potential policies and measures see e.g. SAICM, Financing the sound management of chemicals and waste beyond 2020. Note by the secretariat“, SAICM/IP.2/9 of 12 January 2018, 20.

In addition, this paper looks at a fund modelled on the Multilateral Fund for the Implementation of the Montreal Protocol.

The SAICM Secretariat has provided an overview of more options for institutional setup and financing models such as blended finance that can be relevant to new chemicals and waste management framework.⁸²

a. GEF

Established in 1992, GEF is funded by donor states every four years through formalised and periodic “replenishments”. These are basically negotiations between donor countries, developing countries, and the GEF secretariat, at which currently 39 donor countries pledge to pay a certain amount into the GEF for the next replenishment period. The sum of these contributions is the total budget that GEF has available for this period. GEF funds are available to developing countries and countries with economies in transition.⁸³

The GEF serves as the Financial Mechanism for the Stockholm Convention on Persistent Organic Pollutants and for the Minamata Convention on Mercury. Since GEF4, GEF has also financed SAICM. GEF-7 in 2018 resulted in a joint pledge of about USD 4.1 billion. The replenishment determines how much money is available for each of GEF’s focal area. GEF provides funding in its five focal areas. “Chemicals and waste” is one of them. Today the focal area combines persistent organic pollutants, ozone-depleting substances, mercury and SAICM in an integrated manner.⁸⁴ Therefore the option of a revised focal area, as envisaged in the 2012 UNEP Proposal, has already been implemented.

The GEF has six complementary programs:

- Develop and demonstrate new tools and economic approaches for managing harmful chemicals and waste in a sound manner.
- Support enabling activities and promote their integration into national budgets and planning processes, national and sector policies and actions and global monitoring.
- Reduce and eliminate POPs.
- Reduce or eliminate anthropogenic emissions and releases of mercury to the environment.
- Complete the phase out of ozone-depleting substances in countries with economies in transition and assist Article 5 countries under the Montreal Protocol to achieve climate mitigation benefits.
- Support regional approaches to eliminate and reduce harmful chemicals and waste in least developed countries and Small Island Developing States.

Advantages of using GEF for a new post 2020 global framework on chemicals and waste management include inter alia:

- It is an already established institution with 25 years of experience.
- It has specific experience in financing chemicals and waste, including SAICM
- It has specific experience in serving as a financial mechanism to a treaty.

⁸¹ UNEP doc. UNEP/GC.27/7 of 11 December 2012 para 31.

⁸² SAICM, Financing the sound management of chemicals and waste beyond 2020. Note by the secretariat“, SAICM/IP.2/9 of 12 January 2018, 26.

⁸³ See generally <https://www.thegef.org/about/funding>.

⁸⁴ GEF, Chemicals and Waste, (<https://www.thegef.org/topics/chemicals-and-waste>).

- Is is trusted by donor countries.

Disadvantages include inter alia:

- Complaints about small amount available specifically for SAICM (currently about USD 12 mill, that is 0,3% of the total replenishment amount).

b. Bilateral development assistance

It should be noted that a significant part of existing international environmental finance flows as bilateral development assistance.

c. External fund of some kind, e.g. like Montreal Protocol or Oil Liability Fund

Some Conventions and Processes have other funds instead of, or in addition to, GEF. For instance:

- Multilateral Fund under the Montreal Protocol
- Green Climate Fund under the climate regime
- LDN Fund for the CCD.
- Oil Liability Fund

Each of these funds has its own special setup and role, due to historical developments, the particular subject matter, and the political circumstances that led to its creation.

The MP has its own fund, the **Multilateral Fund**, which works solely under, and for, the MP. It was established by a COP decision. It is funded mainly by contributions from developed countries as defined under the MP. The contributions are mandatory⁸⁵ as “assessed contributions”: How much each country has to pay is determined by reference to the scale of assessments that determines membership contributions to the UN. For each country, the scale lists a certain percentage of the total budget that that country has to pay. The MF has also received additional voluntary contributions from donor countries.

In the climate regime, the **Paris Agreement** uses the financial mechanism of the UNFCCC. This comprises two “operating entities”, the GEF and the **Green Climate Fund (GCF)**. Both are under the “guidance” of the COP, i.e. at arm’s length, with regard to policies, programme priorities and eligibility criteria. The GEF also serves other Environmental Agreements and climate is just one of several focal areas. The Green Climate Fund was established in following the Copenhagen and Cancun COPs in 2009 and 2010 solely for financing climate. It is also a separate legal entity. It will be funded by replenishments from donor countries, but there has been no formal replenishment process as yet. Its current funding budget of around 10 bn was raised in 2014 by an ad-hoc process called “initial resource mobilisation”. The GCF is supposed to finance projects at scale and its projects are implemented by accredited partner organisations. According to its “country driven approach”, developing countries appoint a National Designated Authority that acts as the interface between their government and GCF, and must approve all GCF project activities within the country. The GCF’s key features also include a Private Sector Facility which can engage directly with the private sector in transformational climate-sensitive investments.

Land Degradation Neutrality Fund under the CCD: This is a new Fund established in cooperation with a private asset management firm.⁸⁶ It is a private impact investment fund, launched in 2017 with

⁸⁵ This view could be challenged on the basis that the contributions were set by a COP decision and that COP decisions are in principle not binding as such. However, we do not discuss the legal details here.

⁸⁶ #LDN Fund brochure 2017, on file.

an initial target size of US\$ 300 Mio and current capital commitments of around USD 100 mill.⁸⁷ It is intended to mobilise public and private capital and to focus on direct investment into large-scale land restoration and land degradation avoidance projects.⁸⁸ However the LDN Fund is not operational as yet and has not started funding projects.

Making industry pay into such a fund would require a two-step process, as set out above: The new post-2020 framework for chemicals and waste management would require or encourage state parties to require industry to pay, e.g. via a tax or levy. States could make industry pay directly into the fund, or the payments could go to the governments first who then pay into the fund. The latter would probably be more complicated because it would require that states agree at the international level to earmark the payments from industry.

Finally, there are **International Oil Pollution Compensation Funds** for oil pollution clean-up from oil tankers. The legal structure is based on several treaties and two international organisations. However, the funding comes from contributions from industry: It is financed by levies on certain types of oil carried by sea. The levies are paid by entities which receive oil after sea transport, and normally not by States.⁸⁹ The treaties require their parties to make these actors pay these levies.

⁸⁷ (last accessed on 24 November 2017).

⁸⁸ #LDN Fund brochure 2017, on file.

⁸⁹ www.iopcfunds.org.



SAICM/OEWG.3/INF/30



**Strategic Approach
to International
Chemicals Management**

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Original: English

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4 of the provisional agenda*

**Progress towards the achievement of the 2020 overall objective
of the sound management of chemicals**

**Report from the World Health Organization (WHO) –
‘Circular economy and health: opportunities and risks (2018)’**

Note by the secretariat

The secretariat has the honour to circulate a link to a report from the World Health Organization. The report is entitled ‘Circular economy and health: opportunities and risks (2018)’ and is available at the following link: www.euro.who.int/en/publications/abstracts/circular-economy-and-health-opportunities-and-risks-2018 .

* SAICM/OEWG.3/1.



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**Strategic Approach
to International
Chemicals Management**

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

**Submission from the International POPs Elimination Network
(IPEN): (i) IPEN Beyond 2020 Perspectives for OEWG3; (ii)
IPEN Views of SAICM OEWG3; and (iii) IPEN infographic on
key elements for an Enabling Framework**

Note by the secretariat

The secretariat has the honour to circulate, in the annexes to the present note, three documents received from the International POPs Elimination Network (IPEN). Annex I presents IPEN perspectives on beyond 2020 for OEWG3. Annex II is a document on IPEN views of SAICM OEWG3. Annex III is an infographic on IPEN's views of key elements for an enabling framework. The documents are presented in the annexes as received from IPEN and have not been edited by the secretariat.

* SAICM/OEWG.3/1.

IPEN Beyond 2020 Perspectives for OEWG3

The Beyond 2020 process has one required result: It must, “develop recommendations regarding measurable objectives in support of the [2030 Agenda for Sustainable Development](#).” In response, the IPEN Steering Committee adopted a one-page Toxics-Free SDGs pledge in October 2018 that explains actions for a toxics-free future that are essential for sustainable development (see Annex 1, below). This reflects a [series of papers](#) on relevant Beyond 2020 topics developed by IPEN and the Pesticide Action Network (PAN) in 2017, including [measurable objectives in support of Agenda 2030](#).

In our view, a new global agreement on chemical safety should include both an upgrade to SAICM (SAICM2.0) and an enabling framework and include the following features:

- A timeless vision and broad scope that encompasses the entire lifecycle including wastes;
- An enabling framework that acts as an umbrella for all chemicals-related agreements whose elements are endorsed by a ministerial declaration in 2020 that is subsequently adopted by the UN General Assembly;
- New and additional, adequate, sustainable and predictable finance mechanism accessible to all relevant stakeholders to address chemicals and waste issues;
- Measurable [contributions to the Sustainable Development Goals](#);
- Open, inclusive and transparent participation by all stakeholders with a multi-sectoral approach.

The vision of SAICM and the enabling framework should be timeless, include prevention and precaution as priorities, and act to protect human health and the environment. The scope of SAICM2.0 should include the entire lifecycle and all wastes as noted in SDG12.4 which states the importance of achieving “the environmentally sound management of chemicals and all wastes throughout their lifecycle...”

A new enabling framework should include all chemicals-related multilateral agreements under one high-level umbrella. The language of the enabling agreement should allow for the possibility of future legally binding agreements on issues of concern. The enabling framework would respect the legal autonomy of all the agreements it includes and provide several key features:

- Greater coherence among objectives, implementation, and reporting;
- High-level political ownership;
- Full implementation of the chemical safety contributions to the Sustainable Development Goals;
- Links to funded, obligatory national action plans for agreements in the framework;
- Open, inclusive and transparent multi-sectoral and multi-stakeholder participation.

SAICM’s broad scope covers many chemical exposures that lie outside the framework of current chemicals conventions. With the current, rapid expansion of chemical production and use in the developing world, there is a growing need for an effective, stronger, more capable SAICM that receives proper political priority and adequate resources. SAICM 2.0 should include:

- A reasonable number of ambitious objectives with targets that have specific dates and provide measurable contributions to the Sustainable Development Goals.
- A universal periodic review method for reporting.
- Adequate, predictable and sustainable financing that includes [internalization of costs](#) of chemical producing industries at the global level. A 0.1% levy on the chemical industry would produce USD\$5.8 billion per year for implementation of chemical safety measures and be consistent with Rio Principle 16.
- Effective engagement of all IOMC organizations and convention secretariats.
- No reinvention of the international conference, rules of procedure, Bureau and other SAICM elements with a functional track record.

Annex 1. A toxics-free future is essential for sustainable development

As public interest civil society organizations, we join the global campaign for a toxics-free future as an inherent part of sustainable development. Our vision is a world where chemicals and wastes are no longer a source of harm and where all people have the right to a safe and healthy environment, free from toxic threats to surrounding environments and to future generations. We will:

1. Apply the precautionary principle and give priority consideration to the application of preventive measures. (Rio Principle 15)
2. Advance equal participation of women in decision-making, work to obtain gender disaggregated data, and promote policies that protect women from harmful chemicals and wastes. (SDG5)
3. Advocate for best interests of children during the design, implementation and enforcement of public health, environmental and labor laws to protect children from toxics and pollution. (SDG3, Rights of the Child)
4. Work to phase out the production and use of chemical pesticides, especially highly hazardous pesticides and develop national programs to promote and implement agroecology to support sustainable agriculture. (SDG2)
5. Reveal pollution and chemicals in products and processes and uphold and implement the right to information about emissions of chemicals and wastes and full disclosure about their presence in products. (SDG12, Rio Principle 10)
6. Identify, characterize, and advocate for sustainable clean-up of contaminated sites including the meaningful participation of communities, and ensure intergenerational equity and promote ecological restoration. (SDG15)
7. Raise public awareness about harmful chemicals and wastes including through monitoring air, land, water, food, products, and people and promote the development and implementation of safer processes and alternatives, including non-chemical alternatives, and strengthened laws to minimize and prevent pollution. (SDG6, 12, 16)
8. Work to reduce and eliminate ocean pollutants including mercury, persistent organic pollutants, endocrine disrupting chemicals, and plastics. (SDG12, 14)
9. Conduct waste audits, promote recycling and zero waste, and push for cradle to cradle policies without toxic chemical recycling into new products. (SDG11)
10. Advocate and enforce occupational health and safety policies that provide meaningful right to know, prioritize prevention and precaution, establish exposure limits protective of the most vulnerable, and provide equal protection in the workplace and the community. (SDG8, 9)
11. Work with governments to ban single use plastic packaging and products and lead in paint, varnishes, lacquers, stains, enamels, glazes, primers and coatings. (SDG3, 12, 14)
12. Actively participate in decision-making and implementation of policies and agreements on chemicals and wastes at the national, regional, and global levels. (SDG16, Rio Principle 10)
13. Demand that the private sector complies with the UN Guiding Principles on Business and Human Rights; takes responsibility to internalize all costs of chemical production including wastes and recycling infrastructure; adopts extended producer responsibility; provides comprehensive toxicity information on chemicals including nanomaterials; achieves zero discharge of toxic chemicals and wastes in production; and implements green chemistry to make products that are non-toxic, durable, and reusable. (SDG8, 9, 12, 17, Rio Principle 16)



IPEN Views of SAICM OEWG3

March 2019

Additional policy papers relevant to the Beyond 2020 process can be found here: <https://ipen.org/conferences/oewg3>

Note that tracking changes are used in this document to signal text proposals for the Co-Chairs' paper.

Process considerations

- The mandate of the Beyond 2020 contact group should include discussion of a higher-level enabling framework in addition to SAICM2.0.
- An additional IP4 meeting should be added to ensure a successful outcome of the process.
- The SAICM Global Plan of Action minus timeframes should be carried forward into the new agreement, so as not to lose extensive work and a helpful series of work areas and activities for countries and stakeholders to advance chemical safety.

Enabling framework

- The framework should include all chemicals-related multilateral agreements under one high-level umbrella, respecting the legal autonomy of each agreement and allowing for the possibility of future legally binding agreements on issues of concern.¹
- Key features should include:
 - Greater coherence among objectives, implementation, and reporting;
 - High-level political ownership and visibility;
 - Full implementation of the chemical safety contributions to the Sustainable Development Goals;
 - Links to funded obligatory national action plans for agreements in the framework;
 - Open, inclusive and transparent multi-sectoral and multi-stakeholder participation.
- OEWG3 should recommend holding a multi-sectoral ministerial meeting during, or back to back with, ICCM5 and produce a ministerial declaration that endorses elements of the enabling framework.
- OEWG3 should recommend transmitting the ministerial declaration to the UN General Assembly for a resolution that also requests UN agencies and multilateral environmental agreements to participate and commit to the enabling framework within their respective mandates.
- OEWG3 should trigger an intersessional process to develop a paper on the enabling framework for consideration at IP3, working by electronic means with one developed country co-chair and one developing or transition country co-chair.

SAICM2.0 Vision

- The vision should be timeless, include prevention and precaution as priorities, and act to protect human health and the environment.
- Text proposal: The vision shared by all stakeholders is to protect human health and the environment from the harmful effects of chemicals and waste, to ensure healthy lives and a sustainable, safe planet for all. [Prevention and precaution under the concerns of all stakeholders and are embedded within this agreement.](#)

SAICM2.0 Scope

- The scope should include the entire lifecycle and all wastes as noted in SDG12.4 which states the importance of achieving *"the environmentally sound management of chemicals and all wastes throughout their lifecycle..."*
- It is important to include environmental integrity to link chemical safety to biodiversity protection – concepts that are especially relevant to agroecology and sustainable food production.

¹ Relevant agreements should include, but are not limited to, Basel, Rotterdam, Stockholm, and Minamata Conventions; SAICM; FAO Code of Conduct; relevant ILO Conventions, and the International Health Regulations.

- Circularity as currently practiced includes toxic recycling that undermines sustainability. The text should clearly state a goal of non-toxic circularity.
- The links between chemical safety and human rights are mainstream principles and part of UNEP's work.
- Text proposal: The scope of the proposed instrument encompasses the environmental, [health](#), agricultural, labour, [social, and economic](#), aspects of managing chemicals and waste, in order to enhance sustainable development, [environmental integrity, non-toxic circularity, and the protection of human rights](#). The instrument takes due account of the [governmental and multi-stakeholder](#) instruments and processes that have been developed to date and is flexible enough to take account of new ones without duplicating efforts.

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SAICM2.0 Principles and Approaches

- The list should include agreements with high relevance to chemical safety, including regional agreements dealing with key chemical safety principles and fundamental agreements relevant to sustainable food production, safe working conditions, and the right to a safe and healthy environment.
- Agreements to add:
 - [United Nations Declaration on the Rights of Peasants](#)
 - [International Covenant on Economic, Social and Cultural Rights 1966](#)
 - [Universal Declaration of Human Rights UDHR 1948](#)
 - [Escazú Agreement](#)
 - [ILO Convention No.184](#)
 - [Aarhus Convention](#)
 - [Bamako Convention](#)
 - [Waigani Convention](#)

SAICM2.0 Strategic Objectives

- The agreement should have a reasonable number of ambitious objectives with targets that have specific dates and provide measurable contributions to the Sustainable Development Goals.
- Strategic objective A: Measures are identified, implemented and enforced in order to prevent and minimize harm from chemicals throughout their life cycle and waste.
 - All three components are important and the first priority should be prevention.
- Strategic objective B: Comprehensive and sufficient knowledge, data, information and awareness is generated, available and accessible to all to enable informed decisions and actions
 - The knowledge and data should be comprehensive and sufficient to enable informed decisions.
- Strategic objective C: Issues of concern [are identified, prioritized and addressed](#)
 - An issue of concern that affects an entire region should not be discarded. Accepting or rejecting an issue can be a detail that emerges in discussions on specific issues.
- Strategic objective D: [Prevention of harm](#) to human health and the environment [is prioritized through safer alternatives and](#) innovative and sustainable solutions and forward thinking
 - It is important to prioritize prevention and include safer alternatives.
- Strategic objective E: The [sound management of chemicals and waste makes concrete contributions](#) to achieve sustainable development [through measurable actions](#).
 - The importance of sound chemicals management is more than having recognition or accelerating actions or making partnerships – it is accomplishing chemical safety so that sustainable development can occur.

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SAICM2.0 Institutional Arrangements

- SAICM elements with a functional track record should not be reinvented. This includes the international conference, rules of procedure, and the Bureau. Synergies should be added to li, iv, and vi.
- Text proposal International Conference i: To promote the implementation of existing international instruments and programmes on chemicals and waste, [to promote coherence among them, and to identify gaps](#).
- Text proposal International Conference vi: To [anticipate and](#) determine processes to guide appropriate action on issues of global concern [before and](#) as they arise and to facilitate and forge consensus on and provide an avenue to focus attention on priorities for cooperative action.

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- Text proposal International Conference for a new 1st element: [To oversee implementation of the Agreement.](#)
- Text proposal for Secretariat viiii: To report to the international conference on implementation by all stakeholders [and progress against objectives and targets.](#)

SAICM2.0 Mechanisms to support implementation

- **National implementation**
 - Funded national action plans are a key mechanism to support implementation.
 - New text proposal i: To implement sound chemicals and wastes management each government should, in conjunction with other stakeholders, develop a national plan of action which is transmitted to the secretariat and implementation of which is reported to the International Conference.
- **Regional, [sub-regional](#) and sectoral cooperation and coordination**
 - In regional cooperation, sectoral meetings would provide an opportunity to advance initiatives, particularly those such as pesticides that are not typically covered by SAICM regional meetings which usually emphasize ministries of environment.
- **Engagement of IOMC organizations**
 - Significantly strengthened engagement of IOMC organizations is needed through a detailed plan of actions on Agenda 2030 targets.
- **Industry and business engagement**
 - iii: Cooperative actions, capacity-building and mentoring by industries and businesses on global priorities can make significant contributions to the implementation of the sound management of chemicals and waste. This includes, among other things, voluntary industry initiatives, product stewardship, [implementing green chemistry to make products that are non-toxic, durable, and reusable, providing comprehensive toxicity and use information on all chemicals including nanomaterials, achieving zero discharge of toxic chemicals and wastes in production, internalizing all costs of chemical production including wastes and recycling infrastructure, and complying with the UN Guiding Principles on Business and Human Rights.](#)
 - iv: All industry sectors should participate in the development of policies, projects and partnerships on the sound management of chemicals and waste [as well as in implementation of legal requirements, except where there is a conflict of interest.](#) The stewardship of chemicals should include the full life cycle, including primary producers, the downstream manufacturing sector, distributors and vendors, [exporters, importers, recyclers, and waste handlers,](#) building on existing initiatives where relevant. Both sector-specific and cross-sectoral strategies could be used to engage chemical producers and users.
- **Academia engagement**
 - Academia should contribute to and cooperate in the generation of relevant knowledge, data and information on the [hazards of, risks from, and](#) monitoring of chemicals and waste, including in respect of [identifying](#) issues of concern that warrant [action and alternatives.](#)
- **Subsidiary and/or ad hoc expert bodies**
 - For a possible subsidiary body to be useful, it would have to be a multidisciplinary body (extending beyond toxicology) to ensure that it includes adequate representation and consideration of the full spectrum of scientific and public health disciplines related to chemical safety.
 - Precise terms of reference of subsidiary body would be needed to ensure that all SAICM stakeholder groups able to fully participate and that strict conflict of interest policies are implemented.
 - Extensive consideration on sustainable, adequate funding of such a body should be given before a decision on a subsidiary body is adopted.
- **Taking stock of progress**
 - A periodic review system for reporting should be implemented that reports on actions in the National Action Plan and others including comments from stakeholders. An expert panel would review the reports and propose recommendations and countries could come up for review every three years. These reports could form the basis of SAICM2.0 effectiveness evaluation along with assessment of financing, capacity building and other important elements of the agreement.
- **Updating the instrument over time**

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- SAICM2.0 should contain a mechanism for amendment to enable adjustment as new information and challenges occur.

SAICM2.0 Targets

- Please see Annex 1.

Financing

- SAICM is underfinanced. GEF-7 allocations have increased funding to the chemicals and waste focal area but SAICM funding remains the same at USD\$13 million for four years – 1.4% of the chemicals and waste budget and 0.2% of the GEF-7 replenishment.²
- UNEP should implement the recommendation in the UNEP evaluation² of the integrated approach to, *“make a formal request to donors to make an overt signal that chemicals and waste are a fundable component of development plans.”*
- A SAICM clearing house mechanism should publicly track development aid for sound chemicals management
- Private sector financing is poorly implemented in the integrated approach. The UNEP evaluation² notes that, *“The use of the integrated approach to trigger new financial and in-kind participation of industry is not strongly evidenced.”*
- Adequate, predictable and sustainable financing that includes internalization of costs of chemical producing industries at the global level. A 0.1% levy on the chemical industry would produce USD\$5.8 billion per year for implementation of chemical safety measures and be consistent with Rio Principle 16.
- UNEP should implement the evaluation² recommendation to, *“commission studies on market-based instruments for cost internalisation and incentives for sustainable consumption and production, particularly for green chemistry investments.”*
- The UNEP evaluation² notes that, *“Civil society has lost out from the closure of the QSP to which civil society could apply for funding. The Special Programme does not consider CSOs as an institution for implementation and this has generated concerns among civil society organizations.”*
- In line with the evaluation, UNEP should *“propose solutions to address civil society financing”* including *“changing Special Programme grants to include the possibility of sub-grants to CSOs.”*
- A specific fund for SAICM implementation should be established that provides funding for smaller grants than GEF categories and is designed using lessons learned from the SAICM QSP program.

Partnerships

- Partnerships are not a substitute for a functioning financial mechanism or the need to internalize costs within the chemicals-producing industry.
- Partnerships should: Serve the implementation of internationally agreed goals; be coherent with national law, development plans and strategies; respect international law and be in line with agreed principles and values; be transparent and accountable; provide an added value, and complement rather than substitute commitments made by governments; have a secure funding base; and be multi-stakeholder driven, with clear roles outlined for the different partners.
- According to the UN Secretary General’s principles: *“Cooperation with the business sector must be transparent. Information on the nature and scope of major cooperative arrangements should be available within the concerned United Nations entity and to the public at large.”*
- Partnerships should only be operating with businesses that are consistent with UN Guidelines including UN Global Compact and the UN Guiding Principles on Business and Human Rights. These include relevant chemical safety principles such as, *“Businesses should support a precautionary approach to environmental challenges.”* and *“Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.”*

Progress report for 2014 - 2016

- Considering the robust SAICM evaluation and to permit focus on the Beyond 2020 outcomes, a progress report for 2017 – 2019 should not be developed.

² SAICM/OEWG.3/INF/11

Emerging policy issues and other issues of concern³

- INF9 not yet available
- Current EPIs and issues of concern should be carried forward into SAICM2.0 so as not to lose momentum on progress.
- **Lead in paint:** While 71 countries have reported to have legally binding controls on lead paint, only a third of these have been adopted since the lead paint was adopted as an emerging policy issue in 2009. Also, many of these regulations are either not protective or effective. It is clear that urgent action must be taken by governments, industry and civil society to accelerate the establishment and enforcement of legally-binding controls on lead in paint in all countries. Governments should state their intention to do so at OEWG3.
- **Chemicals in products:** Since access to information on chemicals in products is limited, progress has been slow in fulfilling CIP Programme Objectives. The lack of information applies to all categories of products. This is an area that requires greater industry responsibility and forward progress. The discrepancy and non-harmonized rules of information exchange on chemicals in products in various countries/regions justifies the need for disclosure of full health and safety information and the complete identity of chemicals in individual constituent components of products prioritizing chemicals identified according to SAICM criteria. This information should be publicly available throughout the entire product life-cycle, including during product manufacture, use, recycling and/or disposal.
- **Hazardous chemicals in electronics:** Work on the design and production phases of this issue have largely been ignored. Electronics production is highly relevant to the relationship between women and chemical safety as women often make up the majority of the workforce. Public interest NGOs in key production countries such as South Korea and Vietnam have revealed serious health impacts in electronics production workers, especially in women.
- **EDCs:** UNEP released 3 important reports on EDCs in 2018, but these are absent in the meeting document on this topic. UNEP should widely disseminate this important information on identifying EDCs, exposures and effects, and existing national, regional and global frameworks.
- **Nano:** Work on this issue been useful in raising awareness, but further efforts are needed to create momentum and spur real precautionary actions at the global level. Broadening the involvement of governments and UN agencies is essential.
- **PFCs:** IOMC agencies should start to develop guidance for regulating PFAS as a class. Investigations by IPEN POs in Bangladesh, India, Indonesia, Japan, Malaysia, Nepal, Sri Lanka, Thailand, and Vietnam indicates widespread PFAS pollution in Asia. IPEN has also worked with experts to develop key technical information on fluorine-free firefighting foams.
- **HHPs:** Since ICCM4, work on this issue has lagged at the global level despite its critical importance to SDG2. Active work by public interest NGOs includes inventories of use, documentation of harms, and implementation of agroecological alternatives. FAO's planned coordination meeting should launch an initiative to phase out highly hazardous pesticides and replace them with nonchemical alternatives, agroecological practices and ecosystem approaches to sustainable food and fibre production, and public health vector control as a priority.

Health sector strategy

- Key areas to advance in the health sector strategy include developing data on pesticide poisoning incidence, implementing the chemicals components of the International Health Regulations, lead paint phase-out, and integration of waste and disposal issues in the health sector.
- At the global level, WHO should resume its role in the SAICM secretariat in SAICM2.0 as outlined in paragraph 29 of the Overarching Policy Strategy.⁴ WHO discontinued its secretariat role in 2012.

³ Emerging Policy Issues include: lead in paint, chemicals in products, hazardous substances within the life cycle of electrical and electronic products, nanotechnologies and manufactured nanomaterials, endocrine-disrupting chemicals, and environmentally persistent pharmaceutical pollutants. Issues of concern include: highly hazardous pesticides and perfluorinated chemicals.

⁴ Para 29: "The Executive Director of UNEP will be requested to establish the Strategic Approach secretariat. UNEP and the World Health Organization (WHO) will take lead roles in the secretariat in their respective areas of expertise in relation to the Strategic Approach, with UNEP assuming overall administrative responsibility."

Annex 1. SAICM2.0 Targets

Strategic objective A: Measures are identified, implemented and enforced in order to prevent and minimize harm from chemicals throughout their life cycle and waste.

- A1: Countries adopt, implement and enforce [comprehensive](#) legal frameworks that address risk prevention and the reduction of adverse impacts from chemicals throughout their life cycle and waste.
- A2: Countries have sufficient capacity to address chemicals and waste issues nationally, including [inspection, monitoring, investigation, enforcement, and](#) appropriate inter-agency coordination and stakeholder participation mechanisms, such as national action plans.
- A3: Countries are implementing the chemicals and waste-related multilateral environmental agreements, as well as health [and safety](#), labour and other relevant conventions, and voluntary mechanisms such as the Globally Harmonized System of Classification and Labelling of Chemicals [and the FAO Code of Conduct](#).
- A4: Stakeholders have incorporated the sound management of chemicals throughout their life cycle and waste into their planning, policies and practices [including internalization of costs](#), thereby supporting the development and implementation of chemicals management systems and other sector-appropriate mechanisms.
- A5: Governments and industry [implement right to know, right to participate, protection from victimization, compensation for injury and illness, freedom of association, and the hierarchy of hazard controls](#) to ensure that workers are protected from the risks associated with chemicals and waste and that workers have the means to protect themselves.
- [A6: Countries develop and implement national action plans on the sound management of chemicals and wastes.](#)
- [A7: Morbidity, mortality, and environmental contamination from or by chemicals and wastes is substantially reduced.](#)
- [A8: Private sector fully implements extended producer responsibility throughout the production and supply chain including take back of obsolete chemicals, wastes, and pesticides containers.](#)
- [A9: Countries prohibit manufacture and export of substances, intermediates, formulations or products that are banned nationally for environmental or health reasons.](#)

Strategic objective B: Comprehensive and sufficient knowledge, data, information and awareness is generated, available and accessible to all to enable informed decisions and actions.

- B1: Comprehensive data and information for [all](#) chemicals on the market are available and accessible, including information and data on properties, health and environmental effects, uses, hazard- and risk-assessment results and risk-management measures, monitoring results and regulatory status throughout their life cycle [nationally, in other countries, and globally](#).
- B2: All stakeholders, in particular industries and regulators, have and are using the most appropriate and standardized tools, guidelines and best practices for assessments and sound management, as well as for the prevention of harm, risk reduction, [most protective occupational and environmental exposure standards](#), monitoring and enforcement.
- B3: Information and standardized methods [such as of comprehensive morbidity and mortality data, and statutory reporting requirements on employers' occupational injuries and diseases related to workplace exposure to chemicals](#) are available [to all](#) and used to understand the impacts of chemicals and waste for improved [poisoning](#), burden-of-disease and cost-of-inaction estimates, to inform the advancement of chemical safety measures and to measure progress towards reducing those impacts.
- B4: Educational, training and public awareness programmes on chemical safety and sustainability have been developed and implemented, including for vulnerable populations, along with worker safety curricula and programmes at all levels.
- B5: Countries and stakeholders are implementing training on environmentally sound and safer alternatives, as well as on [toxics use reduction policies](#), substitutions and the use of safer alternatives, such as agroecology.
- [B6: Workers are informed about actual and potential exposures to hazardous substances in a form that serves their needs.](#)

Strategic objective C: Issues of concern are identified, prioritized and addressed.

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- C1: [Processes and programmes](#) of work including timelines are established, adopted and implemented for identified issues of concern [to reduce and eliminate harm](#).
- C2: Information on the properties of chemicals across the supply chain and [their sound management including alternatives](#), and the chemical contents of products is available to all to enable informed decisions and actions.
- C3: [Recommendations are made on how stakeholders should address the issues](#).

Strategic objective D: [Prevention of harm to human health and the environment is prioritized through safer alternatives and innovative and sustainable solutions and forward thinking](#)

- D1: Companies adopt [and implement](#) corporate policies and practices, [including those from C3](#), that promote resource efficiency and that incorporate the development, production and use of sustainable and safer alternatives, including new technologies and non-chemical alternatives.
- D2: Governments implement policies that promote innovation to facilitate the [res-use and recycling](#) of products [without carryover of toxic substances](#), the adoption of sustainable and safer alternatives, including new technologies and non-chemical alternatives (e.g., [tax instruments that promote safer alternatives](#), prioritized licensing of [less hazardous](#) alternatives, [process or production methods](#), assessment frameworks, labelling schemes and purchasing policies, [and agroecology](#)).
- D3: Companies, including from the investment sector, incorporate strategies and policies to support the sound management of chemicals and waste in their investment approaches and business models and apply [comprehensive public reporting of sustainability criteria, chemical use, management, and toxics-use reduction plans in annual reports along with](#) internationally-recognized reporting standards where relevant.
- D4: Companies apply sustainable production principles and life cycle management in the design of chemicals, [non-toxic, durable, and reusable](#) materials and products, taking reduced-[hazard](#), design-for-[reuse](#) -or-recycling and non-chemical solutions and processes into account.
- D5: [Companies and industry associations promote change towards sustainability and the safe management of waste and of chemicals and consumer products throughout their life cycles, including in pollution prevention, developing and implementing safer chemical and non-chemical alternatives, zero discharge of toxic chemicals and wastes in production, sharing comprehensive hazard information, promoting and monitoring best practices throughout their supply chains, and building the capacity of small and medium-sized enterprises to reduce risks.](#)
- D6: [Companies comply with the UN Guiding Principles on Business and Human Rights](#)
- D7: [Governments develop and implement policies to assist farmers to transition from Highly Hazardous Pesticides and other pesticides to agroecology.](#)
- D8: [Governments develop and implement policies to end inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions and phasing out those harmful subsidies to reflect their environmental impacts.](#)

- **Strategic objective E: [The sound management of chemicals and waste makes concrete contributions to achieve sustainable development through measurable actions](#).** E1: The highest levels of stakeholder organizations, including government, industry, civil society and international organizations in all relevant sectors formally recognize the importance of and [implement actions](#) on the sound management of chemicals and waste [that contribute](#) to sustainable development.
- E2: Policies and processes for the [sound](#) management of chemicals and waste are integrated into national, [sub-regional](#) and regional development strategies.
- E3: Inter- and intra-sectoral partnerships, networks and collaborative mechanisms are established to mobilize resources, to share information, experiences and lessons learned, and to promote coordinated action at the regional, [sub-regional](#), and international levels.
- [E4: Partnerships with the private sector are transparent and consistent with UN Guidelines including UN Global Compact and the UN Guiding Principles on Business and Human Rights.](#)

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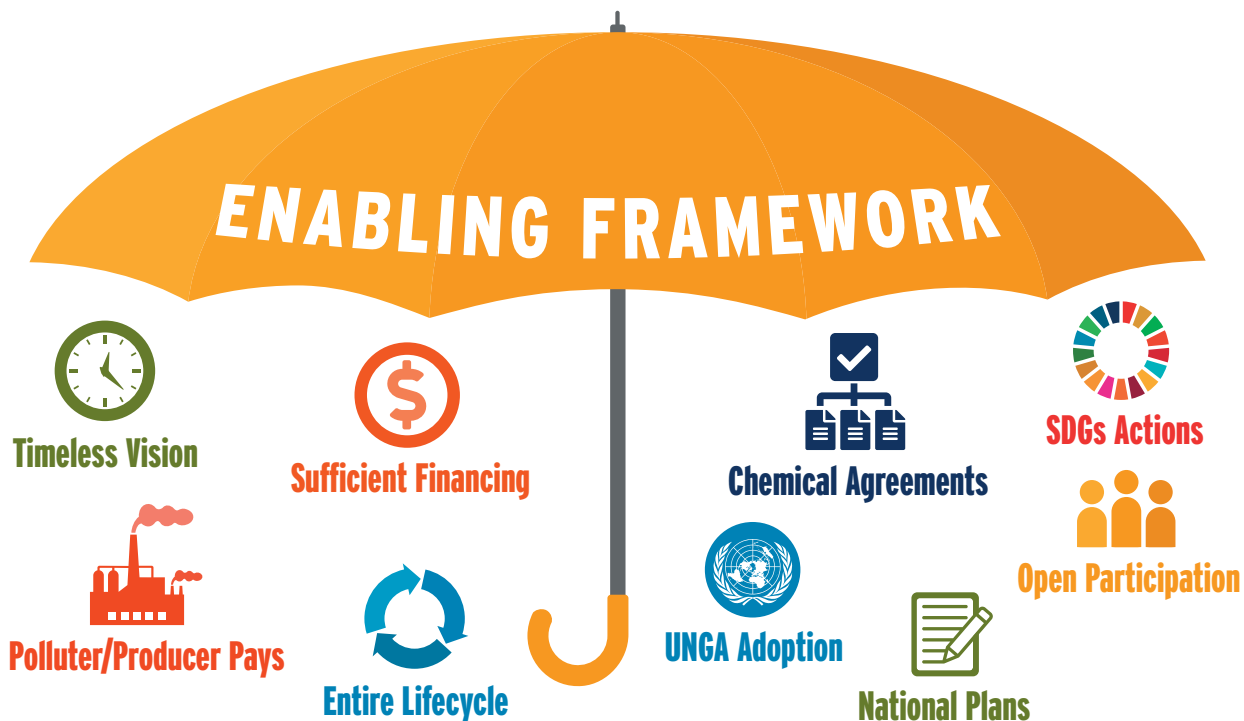
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A New Global Chemicals & Waste Agreement Needs:



A NEW GLOBAL AGREEMENT ON CHEMICAL SAFETY SHOULD INCLUDE BOTH AN UPGRADED SAICM AND AN ENABLING FRAMEWORK WITH THE FOLLOWING FEATURES:

- A timeless vision and broad scope that encompasses the entire lifecycle including wastes
- An enabling framework that acts as an umbrella for all chemicals-related agreements whose elements are endorsed by a ministerial declaration in 2020 that is subsequently adopted by the UN General Assembly
- New and additional, adequate, sustainable and predictable finances to address chemicals and waste issues
- Measurable contributions to the Sustainable Development Goals
- Open, inclusive and transparent participation by all stakeholders with a multi-sectoral approach



ipen.org/oewg3



SAICM/OEWG.3/INF/32



**Strategic Approach
to International
Chemicals Management**

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**Open-ended Working Group of the International Conference
on Chemicals Management
Third meeting**

Montevideo, 2–4 April 2019

Item 4 (b) of the provisional agenda*

**Progress towards the achievement of
the 2020 overall objective of the sound management of chemicals:
Overall orientation and guidance towards the 2020 goal**

SAICM Knowledge Management Strategy

Note by the secretariat

1. The secretariat has developed a SAICM Knowledge Management Strategy attached in the annex to the present note. The report has not been formally edited.
2. The secretariat invites comments from stakeholders on the SAICM Knowledge Management Strategy by 26 April 2019. Furthermore, stakeholders that would like to contribute to the SAICM Knowledge Management Strategy, through providing information and databases for sharing and dissemination, are invited to notify the secretariat.

* SAICM/OEWG.3/1.

SAICM Knowledge Management Strategy

This Knowledge Management Strategy outlines an approach to create, identify, document, strengthen, and disseminate knowledge-intensive activities to 2020 and beyond.

v.0 – January 2019 – validated at Inception Meeting

v.1.0 – 13 February 2019 – reviewed by KM group

v.1.1 – 12 March 2019 – made available to OEWG3

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A. Why

The Strategy contributes to the successful implementation of the Global Best Practices on Emerging Chemical Policy Issues (EPI) of Concern under the Strategic Approach to International Chemicals Management (SAICM), establishing an evidence-based¹ mechanism to improve the management of chemicals.

It responds to paragraph 65 of the Overall orientation and guidance for achieving the 2020 goal of sound management of chemicals², which engages SAICM Secretariat to support countries while linking the chemicals agenda, SDGs and other public and private sector initiatives.

1. Objectives

1. Sharing knowledge and information on the sound management of chemicals and EPIs

- a) Gather and make available relevant and high-quality information products reaching a widespread public in an easy access format (the type of information will depend on the public³)
- b) Establish a systematic approach to consolidate and disseminate available knowledge to ensure efficient use of resources
- c) Provide access for key audiences to scientific and academic information on chemicals management and EPIs

2. Track progress of SAICM implementation, in particular on EPIs

- a) Review progress at national level of SAICM implementation over time on a specific set of indicators.
- b) Share and apply experience knowledge, including developments, best practices, milestones, trends and lessons learned for implementation of projects.
- c) Focus knowledge work and product sharing into related ongoing scientific research, tracking regulatory status on SAICM implementation.
- d) Support the identification of regional and global trends, identify gaps, highlight needs, promote South-South cooperation.

3. Fostering an enabling environment

- a) Foster a KM culture and provide a space (i.e. platform) of information for the sound management of chemicals and waste where stakeholders participate in communities of practice for peer-to-peer learning exchanges.
- b) Provide connectivity with knowledge and information on chemicals management from other sectors and development agendas.

4. Involving strategic partners and joint approaches at global and local level

- a) Promote partnerships and support accelerating the pace of scientific research on EPIs.

¹ Component 2 will provide tools and methods on the building, electronics and toy sectors. These include Usetox methodologies, the SPP guidance at a global level, and experience sharing from pilot implementation in countries.

² <http://www.saicm.org/Portals/12/Documents/OOG%20document%20English.pdf>

³ Additional practical tools on top of scientific information may be of interest for Private sector, SMEs and consultancy / service providers such as RECPNet members

- b) Facilitate dialogue amongst countries and cooperation with other platforms, serving other networks at a technical and scientific level and help to identify information gaps and needs to achieve the SAICM beyond 2020 goal.
- c) Establish a global network of EPI experts.
- d) Effective links between the chemicals agenda (through SAICM) with other policy, science and private sector initiatives will be fostered to facilitate the necessary policy and behavioral shift and contribute to the 2020 SAICM goal and the 2030 Agenda for Sustainable Development.
- e) Facilitate further engagement and necessary policy and behavioral shift to achieve the 2020 SAICM Goal and the 2030 Agenda for Sustainable Development.

B. Stakeholders / Audience

Four main groups of stakeholders/audience were identified: government, private sector, civil society, and implementers (project executing partners, steering committee and implementing agency).

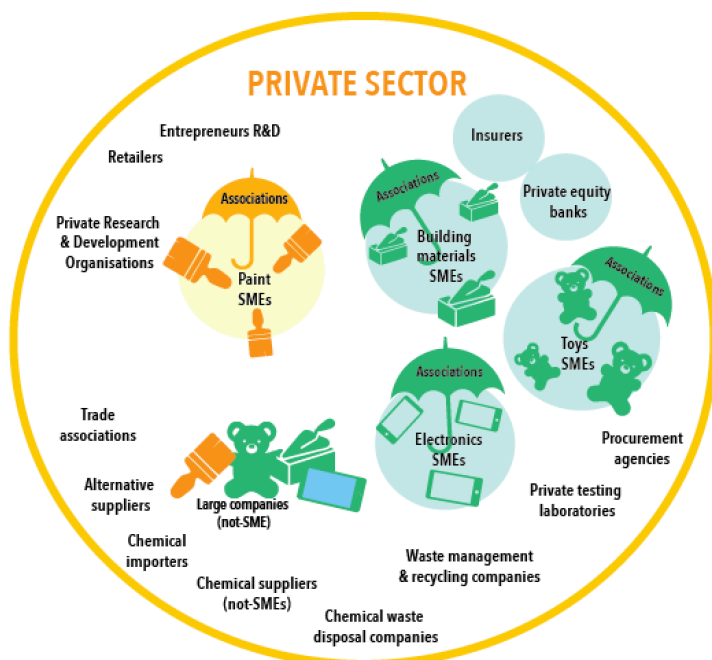
1. Government

National governments (secretaries, ministries, regional, local, intergovernmental organizations), technical governmental agencies, regulators, testing laboratories, public R&D organizations, development banks, enforcement agencies, sustainable procurement agencies, standards organizations.



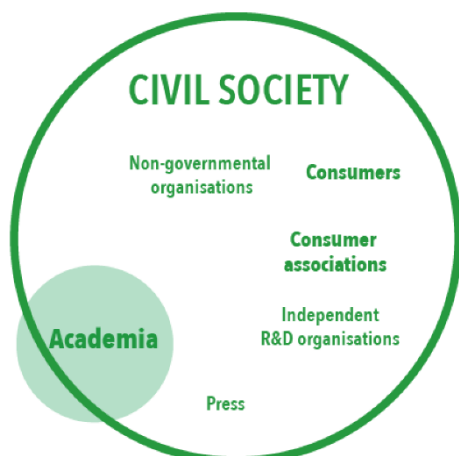
2. Private sector

Small and medium enterprises (paint, building materials, toys, electronics), industry associations, trade associations, large enterprises (including chemical suppliers), private R&D organizations, private testing laboratories, chemical importers, alternative suppliers, chemical waste and disposal companies, retailers, entrepreneurs in R&D, insurers, private equity banks.

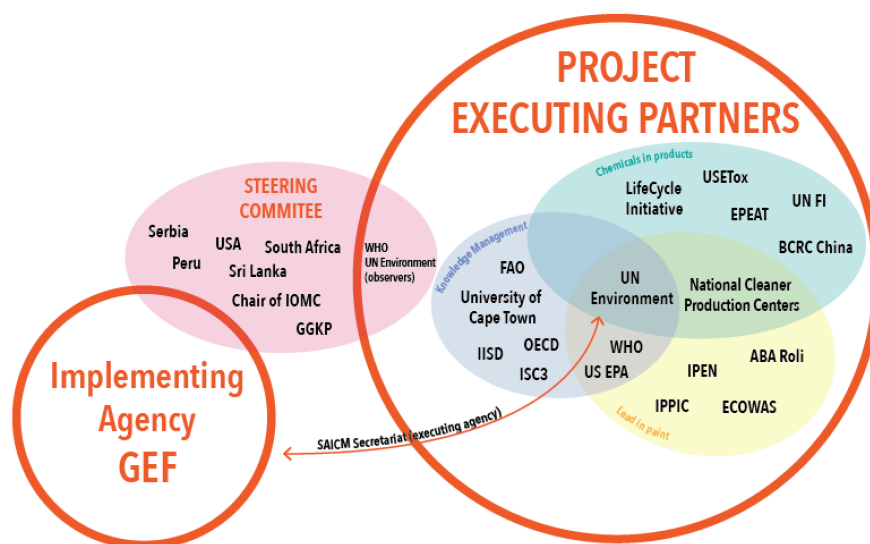


3. Civil society

Consumers, consumers associations, academia, independent R&D organizations, NGOs, press.



4. SAICM GEF Project executing partners



Project executing partners:

Knowledge management: UN Environment, IISD, FAO, University of Cape Town, OECD, ISC3, US EPA;

Chemicals in products: UN Environment (including Chemicals and Health Branch, LifeCycle Initiative, UNEP Finance Initiative), USETox, EPEAT, BCRC China, National Cleaner Production Centers;

Lead in Paint: UN Environment, WHO, IPEN, IPPIC, US EPA, ECOWAS, ABA Roli, National Clean Production Centers;

Executing agency: SAICM Secretariat;

Implementing agency: UNEP Chemicals and Health Branch GEF Unit;

The knowledge exchanges between the key stakeholders identified above will be mapped to be reinforced by this strategy (draft below). The mapping will be periodically reviewed to identify new dynamics. Knowledge-based outputs will be developed to create, document, and strengthen exchanges.



C. Knowledge-based outputs, tools and processes

The following knowledge-based outputs, tools and processes were identified as ways to support the implementation of this strategy. Details on each of the chosen items will be added as additional chapters of this strategy throughout the project realization.

1. Identification of major target groups, their needs, motivations and behavior (Annex Personas).
2. Identification and creation of high-quality documents that link the chemicals agenda with SDGs, specifically targeting SDG 2,3,6,11,12⁴ and considering gender priorities in chemicals management.
3. Identification of existing websites, knowledge management platforms, communities of practice, and other tools aligned with the Project's objectives.
4. Database of multimedia resources classified by type (tools and best practices⁵; scientific, technical, research; training materials, toolkits⁶; policy and legislation; communication/ awareness raising, meeting documents, etc.), country, EPIs and purpose (tools and methods for decision support on chemicals management, etc.).
5. Database of EPI experts (and networks of experts) classified by country and expertise.
6. Database on EPI tracking and SAICM implementation progress at national, regional and global levels.
7. Data visualization tools (maps, charts).
8. Communities of practice (identification of active communities and/or development of new ones).
9. Survey tools to gather feedback on the knowledge strategy design and progress, aiming to identify gaps and opportunities to strengthen knowledge flows.
10. Collaborative calendar with user-input events (including SAICM meetings).
11. Consider innovative approaches to knowledge management such as big data, artificial intelligence, gamification, virtual reality and internet of things.
12. Communications strategy, including social media, aligned with UN Environment communication guidelines.
13. Processes to promote media cross-posting and media uptake amongst partners, with great focus on social media.
14. Processes to engage and encourage partners to provide knowledge deliverables such as thematic papers, elements for side events, opportunities to present in science and policy related events (side events at SAICM OEWG3 and ICCM5).
15. Processes for identifying, attending and presenting at relevant meetings and forums linking SDGs, chemicals and health.

⁴ The UN Environment RM-Branch will support this link, and more broadly, the linkages related to SCP targets (beyond SDG 12).

⁵ Tools and best practices will be used to illustrate how i.e., a policy was developed, research information was communicated, a project was implemented with relevant toolkits, etc.

⁶ Training materials and toolkits apply to policy setting and policy enforcement through implementation projects with different actors

16. Processes to promote EPIs by facilitating networking, knowledge exchange and partnership among stakeholders through the component deliverables.
17. Processes to encourage project partners to give technical input to write stories on key EPIs, new reports, upcoming meetings, assessment of progress, and/or new decisions and recommendations related to chemicals management (in collaboration with IISD).
18. Processes evaluating, selecting and scaling-up best practices for countries, SAICM stakeholders and a wider audience working on sound management of chemicals.
19. Processes to analyze user interaction in SAICM and partners platforms, track access/download of resources, and map social media activity within stakeholders' channels to identify and engage in trends.

Key tool: online platform

The development of an online platform is envisaged to host the databases mentioned above and serve as a meeting point for stakeholders to create, access and share knowledge on EPIs. Existing platforms/networks will be integrated to build upon their content and features to avoid duplication of resources. The platform will follow a user-centered design through step-by-step developments. It aims to promote user-engagement, ownership, development of features on-demand, and the try-out of innovative features/technologies.

1. Annex: Personas

Personas is a method to better identify target group's needs, motivations, and behaviors. By describing them as individuals, it helps creating reliable and approachable representations of the key stakeholders. Personas are described based on qualitative research and experience to:

- Represent major target groups
- Express major needs and expectations
- Suggest how they're likely to interact
- Describe real people with backgrounds, goals, and values

It is not intended to represent all the audiences or to address all needs. It focuses on major needs of the most important user groups.

Each persona is composed by key information about:

Personal information: Name, nationality, age, location, languages spoken, education level, etc.

Role/profession: Professional title, place of work, responsibilities, etc.

Motivations, needs, common tasks: Which type of activities do they carry out on a regular basis? What are they motivated by? What are they looking for? What are their needs?

Behavior and attitudes: Behavior: Online and offline behavior patterns, helping to identify users' goals. Attitudes: Relevant attitudes that predict how users will behave

The personas presented below were discussed, created and adjusted during the Inception Meeting (Geneva, 15 January 2019) by all meeting participants.



Government

Kemala Taufik

Assistant to the Ministry of Health of Indonesia

- Indonesian
- 37 years old
- Speaks Javanese, English and Chinese
- MsC in Public Policy

Motivations, needs, common tasks

- Needs to create legislation to restrict the use of hazardous chemicals, protect population's health from lead negative impact.
- Needs to find examples of policies in neighboring countries
- Needs to identify national experts and civil society to consult on the policy making process
- Needs to involve other ministries in her work and activities
- Needs to learn about and consider national/sub-regional context and social economic impact
- Needs to collect evidence to support the policy
- Needs to identify and contact professionals for specific information, technical support, etc.
- Needs to contract and guide awareness campaigns about new legislation and reinforcement

Behaviour/Attitudes

- Uses Facebook, Twitter and SMS frequently
- Frequently attends and organizes face-to-face meetings


Government
Samuel Adebayo
**Representative of the
Economic Community of West
African States (ECOWAS)**

- Nigerian
- 40 years old
- Speaks Yoruba, Igbo and English

Motivations, needs, common tasks

Needs to be informed about status and progress of different West African States' on management of chemicals and waste

Needs to identify countries that carry out good practices in the region

Wants to learn how to evaluate best policies at national and regional level

Wants to interact in communities of practice in specialized themes such as chemicals and waste management regulation

Needs to find other emerging policy issues (EPI) experts on the region to establish new partnerships

Needs to develop a collection of good practices on specific topics such as chemicals.

Behaviour/Attitudes

Prefers calling than sending an email.

Reads briefings prepared for him and follows online news groups from the region

Uses Facebook and Twitter

Consults toolkits, training materials, reports, and is an active member of forums and communities of practice

Attends events and meetings



Private sector

Juan Martínez

Owns/manages a small enterprise of paint (downstream user of chemicals)

- Colombian
- 31 years old
- Fluent in Spanish, basic knowledge of English
- Attended technical schools and specialized courses specific to paint industry

Motivations, needs, common tasks

Wants to increase profit of his company

Needs to know about alternative non-lead pigments to change his company's paint formula, but to stay competitive

Wants to know about current and forthcoming regulations that can have an impact in his products and wants regulations to be enforced ("If I'm following regulations, I want all competitors also following it")

Wants to join networks and associations to make his voice heard in relation to regulation, industry challenges and alternatives

Wants to learn about current trends and best practices in his business area

Needs to meet local/regional professionals and experts that can give him technical assistance to better manage chemicals

Wants to educate his employees on risks of chemicals and better handling of chemicals

Wants to market his new eco-product (educate customers)

Wants to access investment or funding assistance

Wants to ensure that products in his company complies with public and private procurement specific requirements

Wants to know about calls for tenders (sustainable procurement) and apply for them

Needs to understand safety and best handling of new chemicals

Behaviour/Attitudes

Always reachable on his cellphone to solve issues with his company

Coordinates several employees in a non-structured/ ad-hoc way

Takes decisions quickly

Searches on google how to solve issues and asks questions in online forums, communities of practice, Facebook groups, but trusts official information published in "reliable" sites

Gets to details of actual possible uses of chemical additives

Has regular contact with suppliers

Interacts with technical experts, including via online channels

Regularly accesses specific websites related to his area of work



Private sector

Marco Huertas

Manager at Latin American Toy Association

- Mexican
- 45 years old
- Fluent in Spanish and English
- BsC in Economy and MsC in International Development

Motivations, needs, common tasks

- Needs to identify trends, risks and scenarios to anticipate impact in its sector
- Needs to advocate for the concerns of the members of the association
- Needs to identify funding opportunities for project development
- Needs to identify cost-effective alternatives to phase out lead in paint
- Needs to get information on legislation and research on chemical-related topics
- Wants to establish partnerships with international organizations (UN Environment, WHO, Unicef)
- Needs to communicate with governments
- Wants to liaise between large projects (such as GEF project) and members of the association (e.g. SMEs)

Behaviour/Attitudes

- Administers several WhatsApp groups
- Frequently organizes meetings between people from different backgrounds
- Comments and asks for assistance on online forums, discussion groups, communities of practice
- Attends small and large meetings with different stakeholder groups

Civil society

	Ran Xie Professor at the Beijing University of Technology, conducting research on management of chemicals in developing countries - Chinese - 40 years old - Speaks Chinese and English - Post-Doc in Policy Studies and Science
Motivations, needs, common tasks Wants to network/discuss with other experts on specific emerging policy issues Wants to share and discuss about her current scientific research and preliminary findings Needs to learn about case studies, country projects, articles, and other current activities to add to her research Needs to get data on chemical composition from industry Needs to find innovative ways to link academia with policy-making, and find ways to make her findings accessible to policy makers, industries and other organisations Wants to identify current needs and gaps between policy and civil society priorities, and provide or generate evidence to bridge such gaps Wants to be informed about financing and publishing opportunities Wants public recognition for her work/research Wants to help her students find jobs Wants to develop and maintain good networking/connections with stakeholders from the private sector, government and academia (including other universities, research teams working on similar themes) Wants to make academic knowledge more accessible and useful in daily life	Behaviour/Attitudes Reads and writes academic papers Uses WeiBo, Linked In and other social media
	Project executing partner

	Kasun Abeyrathna Officer of the National Cleaner Production Center of Sri Lanka - Sri Lankan - 41 years old - Fluent in Sinhalese and English - PhD in Environmental Engineering
Motivations, needs, common tasks Needs to implement project activities in the country Needs to report progress to project executers Needs to transfer methods, policies and technologies to industries and government Needs to find information that can help governments identify and develop the policy tools and economic instruments for national and local governments Needs to share knowledge outputs which the Center produces Wants to learn innovative ways to conduct trainings Wants to establish new partnerships with IGOs and governments Wants to showcase its work and promote its reputation in the region Needs to convince policy makers Needs to motivate industries to implement project activities Needs to fulfill the contractual requirements of the project (financial reporting, progress reporting, etc.) Wants to exchange practices with other NCPCs and share knowledge	Behaviour/Attitudes Listens to radio shows and podcasts Organises frequent face-to-face meetings Active in Facebook groups and Linked In groups Watches TV Participate in press events and gives media interviews



Civil society

Maria Fernandez

Founder of Peruvian Childhood NGO

- Peruvian
- 40 years old
- Speaks Spanish and English
- BsC in Communication

Motivations, needs, common tasks

Feels responsible for national situation in the country and wants change

Wants effective, enforced laws

Wants safe products for consumers

Needs more information on her NGO's areas of work

Needs to promote the NGO activities to citizens

Behaviour/Attitudes

Good at networking with all types of stakeholders

Uses free software to carry out the NGO's work

Active in social media groups in her region

Attends meetings on her NGO's area of work



Civil society

Dimitris Galanis

Coordinates a European Consumer organisation

- Greek
- 63 years old
- Speaks Greek, English and French
- Retired journalist

Motivations, needs, common tasks

Needs to learn and inform on product labels, purchasing decisions and regulations on day-to-day products.

Wants to guide consumers to remove toxins from day to day consumption

Needs to tell us how to keep ourselves and our families as free as possible from toxic chemicals (when we purchase laundry detergents, household cleaners, cosmetics, personal care products, food, clothing, toys, etc.)

Behaviour/Attitudes

Uses Facebook and check daily news online

Watches television daily



Civil society

Jane West

Chef in a restaurant Consumer

- Canadian
- 28 years old
- Has a 3-years old son and a 1-year old daughter
- High-school level of education

Motivations, needs, common tasks

Concerned about potentially toxic chemicals in products in her house, would like to have quick access to information (links or QR codes to learn more about the products)

Needs to choose smartly the purchase of materials and ingredients for her restaurant (no harmful chemicals)

Looking for information and communication materials (books, brochures, comics, infographics) that will help making educated choices on product purchases (i.e., detergents, toys, clothing, healthcare products)

Wants to find safer alternative options for consumer products

Wants to learn about quality and safety of products in an easy, intuitive way (e.g. from A – safest – to F – hazardous -, or in color schemes)

Doesn't know what are the risks of specific chemicals and lead in products, and want to learn more about it

Behaviour/Attitudes

Gets information via Facebook, Twitter and WhatsApp groups and shares the information along

Watches TV every day (morning shows, news)

Signs online petitions for safety of her baby

Plays online and mobile games


Project executing partner
Elsa Andersson

**Science advisor for the NGO
IPEN (International POPs -
persistent organic pollutants -
Elimination Network)**

- Swedish
- 35 years old
- Speaks English, Swedish and German
- PhD in Chemicals Management

Motivations, needs, common tasks

Wants to mobilize public worldwide to minimize or eliminate hazardous toxic chemicals

Wants to influence policy-making and strengthen existing legislation

Wants to disseminate its knowledge resources and showcase the NGO work

Needs to find latest scientific information data worldwide, current projects, and implementation case studies to share with her colleagues

Needs to identify other NGOs and stakeholders in the same subject to collaborate

Needs to implement activities of the Lead in Paint component of GEF project

Needs to share information on chemicals in products

Needs to have data and information to support her meetings with other stakeholders, such as industry representatives.

Behaviour/Attitudes

Subscribes to specialized academic journals to be informed about current research

Uses Linked In, Facebook, Twitter

Replies every email in detail

Attends and speaks in conferences and meetings


Project executing partner
Jeanine Dufour
Project Officer at the World Health Organization

- Swiss
- 41 years old
- Speaks French, English and Italian

Motivations, needs, common tasks

Needs to support countries to develop policies, investment frameworks and provide technical support

Needs to identify best practices for up-scaling activities in different countries and different projects of her own

Needs to identify and test useful tools and methods for project execution and other current sound management of chemicals and approaches for using in her own projects

Wants to follow up on project progress and get clear insights about partner's activities

Needs to write reports on projects progress to WHO and funders

Needs to communicate with other project implementers, regional and country offices, and national authorities

Needs to develop technical materials upon countries' request

Needs to advise on clear enforceable legal frameworks at national level

Her outputs must be useful to public and/or private sector

Needs to understand existing legal frameworks, market characteristics, industry/governmental mechanisms, and technical capacities within different countries

Behaviour/Attitudes

Checks social media but doesn't watch TV

Listens to radio and podcasts and reads books while commuting

Subscribes to thematic online newsletters

Follows her organization's rules and ethical framework

Receives press clippings from her organization

Attends and speaks in conferences and meetings



**Open-ended Working Group of the International Conference
on Chemicals Management
Third meeting**

Montevideo, 2–4 April 2019

Item 3(b) of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020: considerations for the
sound management of chemicals and waste beyond 2020**

High Ambition Alliance on Chemicals and Waste

Note by the secretariat

1. The secretariat has the honour to circulate, in the annex to the present note, a report received from the Swedish Ministry of the Environment and Energy and the Uruguayan Ministry of Environment on the High Ambition Alliance on Chemicals and Waste. The report is presented in the annex as received and has not been edited by the secretariat.
2. The High Ambition Alliance was established in July 2018 with the aim to create and enhance awareness and understanding about the urgency to act on chemicals and waste at all levels both in the context of the beyond 2020 process and thereafter. The Alliance comprises of a group of committed leaders of ministers and the senior representatives from intergovernmental organizations, industry and civil society.
3. The Alliance met in Nairobi on 13 March 2019 in the margins of UNEA 4. The participants considered the initiative of the Alliance to be very timely. In the discussion, the need for high level political commitment and leadership was stressed, as well as ownership from all stakeholders and sectors. A higher ambition, urgent action and better coordination and synergies was underlined. The role of sound management of chemicals and waste for reaching the Sustainable Development Goals and a circular economy was highlighted, as well as the need for technical support and strengthening of capacity in developing countries. Participants also stressed the need for education, scientific input, research and innovation. There was broad support for the Alliance's joint ambition. The Alliance will meet again tentatively decided to be in the margins of the 25th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Santiago from 2-13 December 2019.
4. The Ministers from Uruguay and Sweden jointly presented a statement as co-chairs of the Alliance to the high-level segment of UNEA4.

* SAICM/OEWG.3/1.



11 March 2019

High Ambition Alliance on Chemicals and Waste

The sound management of chemicals and waste is an important, cross-cutting component of achieving the objectives of the 2030 Sustainable Development Agenda. The global community now has a unique opportunity to raise the political awareness and ensure ambitious actions through a new policy approach to the sound management of chemicals and waste beyond 2020.

Trends data published in the Global Chemicals Outlook II suggest that the expected doubling of the global chemicals market between 2017 and 2030 will increase global chemical releases, along the entire chemicals lifecycle, exposures, concentrations and adverse health and environmental impacts unless the sound management of chemicals and waste is achieved worldwide. WHO estimated that 1.6 million deaths in 2016 were attributable to only a few selected chemicals. Business as usual is not an option. The 2020 goal will not be achieved. Accelerating progress to achieve sound management, and prevention or the minimization of adverse impacts, within the context of the 2030 Agenda is however possible under a sustainability scenario. This will require more focus by national governments and ambitious, urgent and worldwide collaborative action by all stakeholders and sectors and in all countries.

In light of that, We, the ministers and the senior representatives from governments, intergovernmental organizations, industry and civil society, commit to work together to increase our efforts to:

Protect human health and the environment from the harmful effects of chemicals and waste, towards healthy lives and a sustainable, safe planet for all.

- Create and enhance awareness and understanding about the urgency to act on chemicals and waste at all levels.
- Work towards the development of an enabling framework on the sound management of chemicals and waste beyond 2020 for approval at the fifth International Conference on Chemicals Management for further endorsement by high-level political bodies such as the UN General Assembly, UNEA and other governing bodies of UN agencies to strengthen the commitment and actions by all countries, stakeholders and sectors on the sound management of chemicals and waste.
- Work towards an enabling framework that fosters significant progress at all levels including a common vision as well as shared, measurable objectives and targets. The framework comprises independent input from science and should be able to address issues of concern that warrant global action.
- Increase ratification of the existing chemicals and waste-related conventions and enhance support to the development, implementation and enforcement of legislation on chemicals and waste at the national level.

We call on all governments and stakeholders and sectors to join us in the High Ambition Alliance to strengthen the ambition by 2020 and thereafter.

We will contribute to this individually and collectively by stepping up our efforts to respond to the challenges and realise the opportunities provided through the sound management of chemicals and waste. A strong enabling framework will lead to benefits for human health and the environment and a sustainable development for everyone everywhere.



SAICM/OEWG.3/INF/34



**Strategic Approach
to International
Chemicals Management**

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27 March 2019

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**The Strategic Approach and the sound management of
chemicals and waste beyond 2020: considerations for the
sound management of chemicals and waste beyond 2020**

**Zero Discharge of Hazardous Chemicals (ZDHC):
How collective action is transforming the textile industry
in a proactive and systemic way**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Zero Discharge of Hazardous Chemicals (ZDHC), an established non-profit organization, on how collective action is transforming the textile industry in a proactive and systemic way. The report is presented in the annex as received by the secretariat and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex

Zero Discharge of Hazardous Chemicals (ZDHC): How collective action is transforming the textile industry in a proactive and systemic way

Sectorial context

The textile industry is one of the largest industries in the world with an estimated value of US\$ 1.3 trillion that employs more than 300 million people along the global value chain. It is a significant industry for emerging economies and developing countries with their role on the rise. From an environmental and social perspective, the textile industry has still a lot to undertake in order to become fully sustainable. The current system is highly resource-intensive, contributing significantly to environmental challenges in terms of greenhouse gas emissions, water consumption and use of several hundred potentially hazardous chemicals in the various textile processing steps.

A paradigm shift – from product management to supply chain leadership

In 2011, six global apparel brands joint forces as a response to the Greenpeace DETOX campaign to establish a Joint Roadmap with a mission of catalysing positive change in the discharge of hazardous chemicals across the textile and footwear supply chains. These early beginnings of ZDHC (Zero Discharge of Hazardous Chemicals) marked a significant change from product compliance to establishing a collaborative platform for a proactive supply chain management. Meanwhile the collaboration has grown with ZDHC being established as a non-profit organisation and evolving into a multi-stakeholder initiative with currently 125 global Contributors from brands, retailers, value chain affiliates and associates. The vision of ZDHC is widespread implementation of sustainable chemistry, driving innovations and best practices in the textile, apparel, leather and footwear industries to protect consumers, workers and the environment. Through collaborative engagement, standard and guidance setting, as well as implementation and innovation ZDHC takes a leading role in advancing the safer chemicals agenda of these sectors. The ZDHC standards and activities form the backbone of moving the industry from multiple requirements towards the supply chain to one harmonised global framework on sustainable chemical management and environmental protection.

An integral and holistic approach to sustainable chemical management

Within its setup ZDHC has established three major areas that support its vision of implementing sustainable management best practices and innovations in the textile industry.

The **Roadmap to Zero Programme** is developing guidelines and tools for the industry such as the ZDHC Manufacturing Restricted Substances List (ZDHC MRSL), the ZDHC Wastewater Guidelines and the ZDHC Gateway. Awareness raising and capacity building are in the focus of the **ZDHC Academy** which is a global platform where ZDHC accredited trainer providers organize in-person training sessions on chemical management topics for brands, textile and leather manufacturers as well as policy makers. The **Implementation HUB** serves as vehicle to scale implementation and innovation practices and to support continuous improvement on chemical management and environmental performance through a worldwide ZDHC accredited expert system.

Input management – Setting the global industry standard and moving to safer chemistry

The ZDHC MRSL and the Conformance Guidance are rapidly become one of the most widely used standards in the industry for management of input chemistry. The ZDHC MRSL is a list of currently 191 hazardous chemical substances banned from intentional use in facilities that process textile and leather materials in apparel and footwear. The intent of the ZDHC MRSL is to manage the input of chemicals to the suppliers and remove those hazardous substances from the manufacturing processes. For the substances on the ZDHC MRSL technically feasible and economically viable alternatives exist on the market. The list is science-based and was established following clear principles and procedures

in a multi-stakeholder process. The ZDHC MRSL is a living document and is being updated as needed to expand the materials and processes covered and to add substances to be phased out of the supply chains.

Moving beyond the ZDHC MRSL, the ZDHC Gateway – Chemical Module is a database of safer chemical alternatives that are conformant to the ZDHC MRSL. It supports textile and leather manufacturers to find better chemistry and supports non-regrettable substitution of chemicals. In addition, the ZDHC Gateway enables data sharing, reporting and communication within the supply chains from chemical companies to suppliers to brands and retailers. The intention of the ZDHC Incheck report is to enable textile mills and tanneries to communicate their ZDHC MRSL conformity to brand customers. The ZDHC ChemCheck report is a proof designed especially for chemical companies to demonstrate the conformance level of their products to the ZDHC MRSL and to inform purchasing decisions of manufacturing facilities.

Output management – Verifying sound input management and demonstrating environmental protection

The ZDHC wastewater guidelines were established as a single, unified set of expectations for wastewater discharge quality that go beyond regulatory compliance to ensure that the discharged wastewater does not negatively affect the environment. In addition, ZDHC is also developing a set of guidelines to reduce the release of chemicals not only to water but also to soil and air. The ZDHC Gateway – Wastewater Module allows as a global online platform to register and to share verified wastewater test results of textile mills with the ZDHC community, thereby reducing duplicative testing efforts in the supply chains. The ZDHC ClearStream report has been designed as a supporting tool for suppliers to interpret their wastewater test results and to demonstrate their continuous improvement to brand customers. In order to increase transparency and monitor progress, a Public Disclosure Portal has been established to showcase the global supply chain performance with respect to the conformance to the ZDHC wastewater guidelines.

SAICM beyond 2020 – promising opportunities to collaborate, scale and replicate the ZDHC model

The ZDHC approach has clearly proven over the past years that through industry wide collaboration in a voluntary sustainability initiative tangible change along one aligned, global framework can be achieved. While ZDHC is one of the international sustainability initiatives with steadiest momentum, a collaboration with SAICM could bring uptake and scaling to a new dimension. Such partnership bears the potential to strengthen ZDHC further worldwide beyond the participation of front-running companies to a universal sector participation. The worldwide reach of SAICM could be leveraged to involve textile companies of different sustainability engagement and sizes in the implementation of the ZDHC standards and tools. Raising awareness and building capacity on sustainable chemical management amongst the relevant industry stakeholders is key to such accelerated adoption and universal acceptance across the textile and leather supply chains. The governance of ZDHC's sectorial multi-stakeholder setup and its approach to regional anchoring and support mechanisms could also serve as a model to scale the SAICM approach into global supply chains.

The ZDHC model could also stimulate similar initiatives in other chemical-intensive sectors and find replication in further industries, such as furniture, building, electronics, automotive or cosmetics sectors. Key lessons from the textile sector's journey on chemical management are the need to set a global standard in a collaborative approach that is science based and anchored in an expert multi-stakeholder process. The combination of linking a global framework to concrete priorities and measurable sectorial goals has shown to drive tangible action that lead to improvements and accountability in the supply chains.

Another impactful area of joining forces between SAICM and ZDHC is awareness raising and building of capacity on chemical management at scale. Building knowledge and gaining skills on sustainable practices is one of the most essential ingredients to achieve transformation of the industry. In addition to educating the private sector and its supply chains on environmental topics, it is equally important to build capacity with policy makers on sustainable chemical management and related innovations as a basis for revisions of environmental regulations and sound chemicals policy making.

The success stories learnt from the ZDHC initiative could also inform a global knowledge sharing base that demonstrates best practices and innovation examples on chemical and environmental management and draws lessons for other industries on the way to advance sustainability and sustainable development globally.

Experiences and lessons learned to date could contribute to the development of global reduction targets for chemicals and waste from the textiles and fashion industry.



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Strategic Approach to International Chemicals Management

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Item 3 of the provisional agenda*

The Strategic Approach and the sound management of chemicals and waste beyond 2020

Submission of the United Nations Institute for Training and Research (UNITAR):

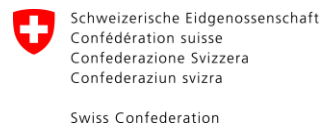
Summary outcome document of the stakeholder workshop on strengthening governance for the sound management of chemicals and waste beyond 2020

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, the summary outcome document of the stakeholder workshop on strengthening governance for the sound management of chemicals and waste beyond 2020, received from the United Nations Institute for Training and Research (UNITAR). The workshop took place from 28 February to 1 March 2019 in Geneva, Switzerland. The document is presented in the annex as received from UNITAR and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Annex



Stakeholder workshop on strengthening governance for the sound management of chemicals and waste beyond 2020

From national to global: Learning from experience, exploring options

*Organized by the United Nations Institute for Training and Research (UNITAR) with support from the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany, and the Federal Office for the Environment of Switzerland
28 February & 1 March 2019, Geneva, Switzerland (hosted at the ILO)*

Summary outcome document

Introduction

On 28 February - 1 March 2019, more than 60 participants from governments, intergovernmental organizations, industry bodies, workers' organisations, civil society organizations and academic institutions from around the world gathered in Geneva, Switzerland for a workshop to discuss governance issues relevant for the intersessional process on the Strategic Approach and the sound management of chemicals and waste beyond 2020. In their deliberations, participants took into account the "Co-chairs' paper" from March 2019 to support the intersessional process¹. The workshop was organized by UNITAR with support from the Governments of Germany and Switzerland, hosted at the International Labour Organization (ILO).

The workshop had the goal to facilitate knowledge-sharing, discuss good practices and identify lessons-learned and opportunities on a range of governance topics relevant for the beyond 2020 process. The scope of the workshop recognised that governance issues are connected through various levels (i.e. local, national, regional and global). It also considered initiatives at the sectoral level, as well as stakeholder networks and initiatives (e.g. private governance).

Specific objectives of the workshop included:

- discuss how the current global chemicals and waste management framework fosters collaboration across agreements, sectors and stakeholders;
- share governance-specific knowledge and experience from other global regimes (e.g. biodiversity governance) and relevant sectors (e.g. health sector)
- identify good practices of private sector governance beyond compliance and explore how relevant action can be considered and advanced globally; and
- explore options for global governance structures and decision-making that can foster wide ownership, as well as commitment and engagement of countries, sectors and actors to achieve results

¹ <http://saicm.org/Portals/12/Documents/meetings/OEWG3/doc/K1900262-SAICM-OEWG3-4-Co-Chairs-Paper-ADVANCE.pdf>

A fundamental and cross-cutting question addressed by participants was how to strengthen and organize international chemicals and waste governance, in order to enhance high-level commitment and engagement of all relevant sectors and stakeholders.

Learning from other clusters

The biodiversity cluster was presented as an example of a collaborative model. The 2011-2020 Strategic Plan for Biodiversity is supported through commitments of all major stakeholders and by a liaison group of biodiversity-related conventions. The strategy was first adopted by the Conference of the Parties to the Convention on Biodiversity and gained a higher level of attention at the 65th General Assembly (GA, 2010), which declared a decade (2011-2020) of biodiversity. National Biodiversity Strategies and Action Plans are linked to, and contribute to, the 20 global Aichi targets as an important element of the Strategic Plan. The Biodiversity Indicator Partnership supports monitoring by developing and using common indicators. Throughout the workshop, reference was also made to climate change as another area from which lessons could be drawn.

Workshop insights and outcomes

Opportunities to strengthen voluntary, multi-sectoral and multi-stakeholder global governance for the sound management of chemicals and waste

Participants explored a range of opportunities to strengthen voluntary, multi-sectoral and multi-stakeholder global governance, referred to as “SAICM 2.0” in the co-chairs’ paper. Insights included:

- The current SAICM model is inclusive and voluntary, bringing in many stakeholders.
- National implementation is a key component for achieving progress at the global level. SAICM has been beneficial in supporting broad, national structures for the management of chemicals and waste.
- The current model of SAICM is run similar to a convention, but without the legal force. Opportunities exist to promote a more dynamic framework that considers stakeholders’ motivations.
- Key to implementation is “empowerment”, with stakeholders taking on leadership roles under a flexible and cooperative approach.
- Multi-sectoral engagement is vital; a new platform will need to facilitate the engagement of major sectors. Consideration should be given as to how resources can be mobilized for such engagement.
- It is important to engage other sectors and stakeholders in the process of setting global targets that require their engagement to achieve them.
- Implementation at the national level could replicate the global SAICM model (multi-sectoral and multi-stakeholder), and national focal points could be nominated for more than one sector.
- National level activities could also focus on the overall orientation and guidance which offers a set of basic elements.
- A new platform may consider focusing its resources on where it can make the biggest impact, such as world-wide implementation of the GHS and basic policies and legislation.
- There is value in clarifying how the chemicals and waste conventions will work with the beyond-2020 process as well as topics to bring in their contribution. A future platform would benefit from being relevant for all international agreements.
- IOMC Participating Organizations play an important role in facilitating multi-sectoral participation. The future platform can benefit from strong participation of IOMC Participating Organizations, potentially starting with the planning of meetings and use of the IOMC logo. This could help to encourage certain sectors and representatives see that the platform serves as a shared space.

Ensuring commitment at the highest level

The workshop discussed possible approaches to enhance the engagement of institutions in international chemicals and waste management, and to obtain commitment at the highest levels of decision-making. This had been achieved at the 2002 World Summit on Sustainable Development, when heads of state and government set the 2020 timeline. Insights included:

- An international governance model that facilitates multi-sectoral and multi-stakeholder engagement at all levels is essential to the successful implementation of strategic objectives and targets.
- Public awareness can often prompt political awareness. Nonetheless, it is important not to assume this political awareness will translate automatically to success.
- Integrating chemicals and waste issues into the agenda of governing bodies of relevant international organizations is important.
- Co-convening the International Conference on Chemicals Management (ICCM) may facilitate common ownership among international bodies and their memberships.
- A UN GA resolution for the sound management of chemicals and waste beyond 2020 may facilitate multi-sectoral engagement and ensure coherence across the cluster. Such a mandate can reinforce commitment to “Delivering as one” building upon what is already in place and respecting the existing provisions for the work of the organizations and autonomy of the Conventions.
- Other options to obtain higher-level commitment may include the United Nations Economic and Social Council (ECOSOC) and the High-Level Political Forum.
- The 2030 Agenda is agreed to at the highest level (UN GA), but implementation is assigned to lower levels, to specific agencies and stakeholders. This split of high-level impetus and implementation at lower levels could be replicated.
- Recognizing that high level commitment was obtained in 2006 when SAICM was first agreed, we need to consider how we can maintain high level commitment to support sustained action at all levels.
- Whatever model is chosen, global governance for chemicals and waste management should be flexible and agile to keep pace with the rapidly changing global landscape of the chemical industry and chemical-intensive industry sectors. It could also make a contribution in identifying emerging issues based on sound science.

Treaties and voluntary approaches in international chemicals and waste governance

Different governance approaches exist at the global level to advance the sound management of chemicals and waste. Insights included:

- There are advantages and disadvantages to legally-binding and voluntary approaches, with examples indicating where they have or have not been effective. Where voluntary approaches are not effective, other approaches (e.g. legally-binding) may be considered.
- For example, pursuing legally-binding options may require time and may not be agile enough to deal with critical issues in time. Different geopolitical aspects may impact the effectiveness of voluntary and legally-binding instruments. Some countries may prioritize legally-binding instruments, and may see that it comes with more stable funding.
- Many noted that the broad, multi-stakeholder and -sector nature of SAICM has been valuable and helpful.
- The Paris Agreement on climate change adopted a “blended” approach to combine voluntary action with legal requirements which focus on common rules (e.g. measurement) rather than mitigation commitments.

Sectoral strategies or road maps

Examples exist where sectors or industries groups have developed specific roads maps to address chemicals and waste issues. The WHO Chemicals Road map, agreed to at the 70th World Health Assembly (2017), was presented and discussed as an example. An industry-focused example, the World Business Council for Sustainable Development’s Chemical Sector SDG, was also discussed. Insights included:

- A Roadmap approach can be beneficial in guiding stakeholders on where and how to start, and who to engage.
- It can be inclusive and encourage stakeholders to take initiative and ownership and helps develop a network of committed stakeholders.
- The WHO chemicals road map is simple to understand while reflecting the cross-cutting nature of issues. It has been used to undertake gap analyses, develop action plans and feed into national

chemicals planning processes. Many workshop participants spoke positively of the road map and described its usefulness to them.

- The road map approach could be a useful tool for other sectors and stakeholder groups to develop and showcase their commitments beyond 2020.

National action plans, programmes and inter-ministerial coordination

National action plans, programmes and inter-ministerial coordination are referred to in the co-chairs' paper as possible approaches to drive country-level priority setting and action to engage key sectors and stakeholders. Insights included:

- National action plans can be good tools to facilitate inter-ministerial coordination, set national priorities and facilitate discussions with donors and partners.
- For National Action Plans to be successful, it is essential to: have all sectors at the table, develop concrete targets that are relevant domestically, cultivate ownership, and set priorities considering available resources within each sector.
- Experience from the Aichi Targets shows that national plans need to take into account national situations and priorities, in addition to global targets.
- National action plans that have a limited scope can be more easily developed.
- Bringing several national plans under one umbrella may be beneficial.
- Action plans are useful to engage with and consider the needs of various sectors, and may also benefit from engaging with subnational actors for implementation.

National assessments, feedback and peer review

There may be potential value in providing countries with external feedback or advice. Taking into account experience from the international health regulations (IHR) and the OECD environmental performance reviews, insights included:

- While country-driven processes are important, there is potential value in providing countries with external feedback or advice. Feedback is important to foster continual improvement and needs to be done in the spirit of positive support. There is a demonstrated desire for such peer review.
- A gap analysis helps to ensure that reporting addresses the correct issues, and fosters information sharing, including on best practice.
- Under the beyond-2020 platform, it would be important to allow time to review reporting, discuss gaps in implementation and facilitate learning.
- There may be an opportunity to use other reporting initiatives to contribute to overall reporting, reducing duplication.

Regional institutions and programmes

A range of different regional mechanisms and institutions are engaged, such as SAICM regional groups and meetings, and the inclusion of chemicals and waste issues in harmonization of trade within economic integration organizations. Insights included:

- Regional organizations can have significant roles in the management of chemicals and waste. However, relevant capacities need to be developed, and could benefit from "lead countries".
- Regional mapping assessments could be useful to identify and prioritize those with potential to have an impact and benefit from increased capacities.
- Bringing in regional groups would need a stakeholder engagement process, with mutual attendance at meetings, and ensuring there is commitment from all sides.
- Regional groups could harmonize notification systems or facilitate transport within a region without the need for notifications. For example, this may facilitate greater trade in waste and recycling.

Private sector governance and standard setting beyond 2020

Both the chemicals industry and chemical-intensive downstream sectors, often through associations, have developed standards and/or codes to guide action of member companies. Insights included:

- Private sector initiatives can support overall policy goals, though must complement other efforts and contribute to measurable goals or targets in sectors and increase transparency.

- Relevant initiatives could be listed under a platform to showcase efforts and commitments. Listing would benefit from criteria and reporting on progress made.
- Downstream users (including waste management and recycling companies) should be engaged. Such engagement may be facilitated by a focus on the circular economy.
- A new platform could be an excellent opportunity to share knowledge among sectors and develop intra-sectoral harmonization (such as on pest and pesticide terminology). Sectors may be willing to learn off each other, if given a platform to share relevant information.
- The chemicals in products programme has some lessons-learned, such as the identification of priority sectors; engagement with these sectors may remain a focus.
- Private sector initiatives at the national level can also support development of national legal requirements, giving leaders an incentive to continue and lift up others.
- Consumers may be a driver of sustainable consumption and production.

Conclusion

The workshop concluded on the need to resuscitate – and maintain - the high-level commitment of the 2002 World Summit on Sustainable Development and carried to ICCM1 through co-hosting the Conference by the then-IOMC Participating Organizations and UNDP in 2006. The intersessional process on beyond 2020 creates a window of opportunity to consider how such high-level and multi-stakeholder commitment could be raised again and how new actors could be engaged in international chemicals and waste governance. Integrating chemicals and waste management considerations into other forums is equally important. To achieve this and to pick up the spirit of 2002, new messages, messengers and commitments are needed to ensure that international chemicals and waste governance beyond 2020 is fit for purpose.



**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

Submissions from the International Sustainable Chemistry

Collaborative Centre (ISC3): (i) Driving transformation towards sustainable chemistry through innovation and entrepreneurship - the ISC3 global start-Up service; and (ii) Reaping the full potential of sustainable chemistry for SAICM, the sound management of chemicals and waste beyond 2020 and the 2030 Agenda

Note by the secretariat

The secretariat has the honour to circulate, in the annexes to the present note, two reports received from the International Sustainable Chemistry Collaborative Centre (ISC3). Annex I is a document on driving transformation towards sustainable chemistry through innovation and entrepreneurship - the ISC3 global start-up service. Annex II is a reflection piece from ISC3 on reaping the full potential of sustainable chemistry for the Strategic Approach, the sound management of chemicals and waste beyond 2020 and the 2030 Agenda. The reports are presented in the annexes as received from the International Sustainable Chemistry Collaborative Centre (ISC3) and have not been edited by the secretariat.

* SAICM/OEWG.3/1.

Driving transformation towards sustainable chemistry through innovation and entrepreneurship - The ISC₃ Global Start-Up Service

The International Sustainable Chemistry Collaborative Centre (ISC₃) is a new independent, international centre dedicated to shaping the transformation towards sustainability in the chemicals sector. By promoting the emerging concept of sustainable chemistry as a new holistic approach, the ISC₃ thrives to contribute to an ambitious framework for the Sound Management of Chemicals and Waste beyond 2020 as well as to the 2030 Agenda for sustainable development and its goals (SDGs). In this endeavour, the centre promotes sustainable chemistry innovation based on the understanding that we need to assess the whole life cycle of products, foster chemical solutions which are benign-by-design and promote new sustainable business models and services.¹

A new programme to accelerate transformative innovation in the chemicals sector



Through its Innovation Hub, hosted by DECHEMA e.V.², the ISC₃ initiates and supports sustainable innovation and entrepreneurship in the chemicals and chemicals-related sectors. Acting as an innovation promoter, the ISC₃ Innovation Hub aims to shape the transformation towards sustainability across countries and along value chains whenever chemicals are applied. Jointly with a global network of partners, the ISC₃ catalyses tech transfer from science to industry and between regions and countries. At the heart of the innovation activities lies the ISC₃ Global Start-up Service with its goal of supporting entrepreneurs in becoming Sustainable Chemistry Changemakers. The main objective of the ISC₃ Start-up Service is to contribute to the global breakthrough of sustainable chemistry by supporting innovators along the entire innovation chain.

The ISC₃ Global Start-up Service addresses primarily innovators with either academic or private sector background in sustainable chemistry-related fields at the global, regional and local level. It targets students, researchers, professional staff in research institutions (ideators) as well as innovators at later stages of the innovation chain (early-stage innovators, grown-up start-ups). While the programme is implemented globally, a special focus are the needs of entrepreneurs at the early development stage and in developing countries and emerging economies. The rationale for this focus is the potentially high leverage effect of sustainable chemistry innovation in those regions, recognizing the global shift of chemicals production and consumption towards the Global East and South. The ISC₃ aims to address this issue by establishing a new global service programme based on four inter-related aspects: sustainability, chemistry, global reach, and tailored support.



¹ For further information on the ISC₃ and the emerging concept of sustainable chemistry please see the ISC₃ paper "Reaping the full potential of sustainable chemistry for SAICM, the Sound Management of Chemicals and Waste beyond 2020 and the 2030 Agenda", submitted as a contribution to the SAICM OEWG, Third Meeting, Montevideo, 2-4 April 2019

² DECHEMA e.V., Society for Chemical Engineering and Biotechnology, Frankfurt, Germany

Support for sustainable chemistry changemakers along the innovation chain

While the main focus of the GSS is on the support of start-ups at an early development stage, the ISC₃ Innovation Hub also aims at providing services for ideators who have not yet founded a company, and grown-up start-ups. Since entrepreneurs in different development stages have different needs, and the content of services differs along the innovation chain, the hub clusters its services around the three following action fields:

DISCOVER: supporting inventors to discover new ideas and turning their ideas into early-stage innovations; this can be achieved e.g. via awareness-raising events, capacity-building of students, incubation programmes, hackathons etc.

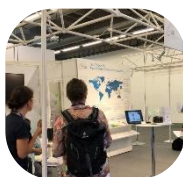
CREATE: supporting entrepreneurs to develop concrete marketable value based on first ideas; this includes supporting innovators with a business idea related to sustainable chemistry to make the next steps towards market entry and market penetration.

EXPAND: providing support of innovators in their expansion and commercialisation strategies.

Services provided can include the following items³:



- Online Library, including an overview of publicly available information such as articles, tutorials and tools
- Sustainable Chemistry Toolbox providing customized guidance
- Specific ideation-related services as awareness-raising events and webinars
- Networking and matchmaking services across sectors and value chains: peer-to-peer, b2b/ b2c, between innovators and investors
- Facilitation of contacts to international experts and advisors
- Conduct of pitching and showcasing events
- Engagement in ISC₃ projects
- Support of drafting of grant applications and for access of funding opportunities
- Support in accessing lab infrastructure and understanding industry needs
- Providing opportunity to present the idea / start-up on ISC₃ communication channels



The standard approach of service delivery is “pro bono” and by means of providing immaterial benefits to innovators respectively. In addition, services may also include direct or indirect financial support, e.g. reimbursing travel costs, covering participation.

A new global network to promote sustainable chemistry innovation

In order to reach out to entrepreneurs in all regions of the world, the ISC₃ is setting up a global network of multipliers. The ISC₃ Spiderweb Network represents the vision of a growing network of organisations and individuals with a shared vision of sustainable chemistry as an important contribution to the SAICM agenda, the Sound Management of Chemicals and Waste beyond 2020 as well as to the 2030 Agenda for sustainable development and its goals. Its actors foster the support of innovators in their regions, mobilise resources and knowledge towards sustainable chemistry and empower other players, in particular start-ups, to join the community. The ISC₃ Innovation Hub is currently looking for partners in all world regions to support sustainable chemistry changemakers.

³ The list of services has been developed based on feedback provided by start-ups at different national, regional and global events, including a joined ISC₃/ UN Environment start-up workshop (September 2017), a start-up session at the Third Green and Sustainable Chemistry Conference (May 2018), a start-up session at the ACHEMA (June 2018), a side event at the DAAD Tunisia Sustainable Agriculture and Sustainable Chemistry workshop (November 2018), etc.

Reaping the full potential of sustainable chemistry for SAICM, the Sound Management of Chemicals and Waste beyond 2020 and the 2030 Agenda

Contributions of the International Sustainable Chemistry Collaborative Centre (ISC₃) towards sustainable transformation in the chemicals sector

Chemicals and the related industry sectors play a crucial role in today's world. Chemical products contribute to our modern living standards and are an increasingly important aspect of the world's economies. "The size of the global chemical industry exceeded United States dollar 5 trillion in 2017. It is projected to double in 2030¹". The exponential growth of chemicals pollution is a source of serious concern, exposing public health and environment to severe risks from hazardous substances, which subsequently hamper sustainable development. According to the second edition of the Global Chemicals Outlook (GCO-II),² "The global goal to minimize adverse impacts of chemicals and waste will not be achieved by 2020. Solutions exist, but more ambitious worldwide action by all stakeholders is urgently required."

Against this background, business as usual is no longer an option. A transformation towards sustainability in the chemical sector is urgently needed. Not only to solve the problems of today, promote the sound management of chemicals and waste on all relevant levels, and prevent future legacies, but also to harness the power of chemistry for sustainable development and the 2030 Agenda. "Driven by global megatrends, growth in the chemical-intensive industry sectors (e.g. construction, agriculture, electronics) creates risks, but also opportunities to advance sustainable consumption, production and product innovations."³ Furthermore, sustainability-driven innovation and digitalisation have the potential to substantially contribute to establishing circular business models, enhance traceability and promote the change towards low carbon energy and feedstock in the chemicals sector. As the GCO-II recognises, accelerating progress is possible, yet only under a sustainability scenario.

The International Sustainable Chemistry Collaborative Centre (ISC₃) is a new independent, international centre, dedicated to shaping the transformation towards sustainability in the chemicals sector. By promoting the emerging concept of sustainable chemistry as a new holistic approach, the ISC₃ thrives to contribute to an ambitious framework for the Sound Management of Chemicals and Waste (SMCW) beyond 2020 as well as to the 2030 Agenda for sustainable development and its goals (SDG). In this endeavour, the centre promotes sustainable chemistry innovation based on the understanding that we need to assess the whole life cycle of products, foster chemical solutions which are benign-by-design and promote new sustainable business models and services. As promoted by ISC₃, sustainable chemistry innovation encompasses the sound management of chemicals and waste and actively works to avoid future legacies through sustainable materials and circular processes in the chemicals sector and beyond. The ISC₃ is convinced that the new holistic approach of sustainable chemistry is among the important drivers of change and thus a key contribution to the SAICM beyond 2020 process and the implementation of the 2030 Agenda.

¹ SAICM/OEWG.3/INF/3 Global Chemicals Outlook II Summary for Policymakers: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development.

² See footnote 1 for reference

³ See footnote 1 for reference

Reaping the full potential of sustainable chemistry

Transitioning towards a green and sustainable chemistry requires new systems thinking approach. It implies to replace the current linear commodities-based take-make-consume-dispose approach with a closing-the-loops benign-by-design approach kept within the planetary boundaries. Sustainable chemistry practices embrace green chemistry and are based on considering the whole life-cycle of substances and materials while looking at waste as a valuable resource to be safely re-used. By following the sustainable chemistry approach, companies and entrepreneurs embark a journey towards re-thinking not only their product assessment and product stewardship schemes, but also towards re-designing their research and development activities and, last but not least, their overall business strategy.

Re-thinking chemistry in a sustainable way enables companies to become increasingly aware that each step and product phase must be designed “with sustainability in mind”.⁴ An industry driven by sustainable chemistry can make a big difference in solving key societal and environmental challenges by using and developing innovative materials, products and business models. UNEP report “Analysis of Stakeholder Submissions on Sustainable Chemistry Pursuant to UNEA Resolution 2/7” shows that sustainable chemistry has the potential to contribute to achieving at least 12 out of 17 SGDs. By re-shaping business models and by inspiring entrepreneurs and startups, the emerging concept offers market-oriented approaches to transform the chemicals sector, while impacting the up- and downstream industries in a positive way.

As a source of inspiration for innovation, sustainable chemistry has the potential to be even more than a transformative element in the chemical sector: as orientation and conceptual approach it supports scientists, entrepreneurs and startups, especially in developing countries, to develop new products and processes which are purpose-driven and add value to our societies. Hereby the concept supports economic development and entrepreneurship in developing countries as well as in emerging and industrialized economies, based on the overarching goals of sustainable development.

Furthermore, sustainable chemistry offers guiding principles for the development of enabling policies for green-tech, eco-design, consumer and worker protection and the sound management of chemicals and waste on the national as well as on the international level. Fostering the emerging concept might therefore be an important asset to speed up the sound management of chemicals and waste. An ambitious framework for SMCW beyond 2020 should profit in many ways from integrating and reaping the full potential of green and sustainable chemistry.

Contributions to SAICM and SMCW framework beyond 2020 while serving the 2030 Agenda

The ISC₃ strongly supports the development of an ambitious SAICM beyond 2020 framework as an essential element of the future international agenda towards the sound management of chemicals and waste and as an important driver towards sustainable transformation in the chemicals sector.

As a globally acting independent institution, the ISC₃ promotes sustainable chemistry solutions worldwide while enhancing SMCW and serving the 2030 Agenda. The centre works on five levels: collaboration, innovation, education, research and information. Together with its Innovation Hub at DECHEMA e.V.⁵ and its Research & Education Hub at Leuphana University⁶ as well as its new “Americas Hub” at University Massachusetts Lowell⁷ and its network of experts and partners, the ISC₃ engages on different levels in the international dialogue and the sustainable innovation agenda.

⁴ Tom Keijer, Vincent Bakker & J. Chris Slootweg: Circular chemistry to enable a circular economy.

⁵ Dr. Andreas Förster, DECHEMA e.V., Society for Chemical Engineering and Biotechnology, Frankfurt, Germany

⁶ Prof. Dr. Klaus Kümmerer, Institute of Sustainable and Environmental Chemistry, Leuphana University, Luneburg, Germany

⁷ Prof. Joel Tickner, UMass Lowell Center for Sustainable Production, Massachusetts, USA

- As a multi-stakeholder platform ISC₃ serves as an interface between science, industry, politics and civil society. By connecting different stakeholders, the centre enables co-creation and transformative collaboration on new solutions. The ISC₃ helps to inspire decision-makers and raises awareness for the potentials of sustainable innovations – in business, politics and science.
- Acting as an innovation accelerator, the ISC₃ carries out innovation scouting activities to discover new technologies, materials and new business ideas, especially in developing countries. Through its Global Start-up Service, the centre offers start-ups, entrepreneurs and innovators mentoring, training and other supporting services to bring new sustainable solution from the chemicals sector to the markets.
- ISC₃ initiates collaborative foresight and projects to explore the benefits and challenges of sustainable chemistry innovation and develop recommendations and pathways towards transformation. Through its collaborative projects, the centre engages with frontrunner companies to push forward sustainability related activities.
- Through its International School and annual Summer School, the ISC₃ brings sustainable chemistry as a new field to the curricula for chemists and helps to change the mindset of chemical experts. The centre monitors trends in research, thus contributing to the global scientific discussion on sustainable chemistry.

Developing a common understanding of sustainable chemistry

The ongoing international debate on sustainable chemistry and the sound management of chemicals highlights not only opportunities of the emerging concept, the debate also shows that expectations towards sustainable chemistry differ between the stakeholder groups. Developing a common understanding of sustainable chemistry therefore seems to be vital for the future of the new transformative concept.

To address the different perspectives, expectations and criteria discussed in the context of sustainable chemistry, the ISC₃ seeks to initiate a stakeholder dialogue process towards a common understanding of sustainable chemistry.

According to UNEP's "Survey on the Sustainable Chemistry Concept", a large majority of respondents felt that sustainable chemistry is an important component relevant in advancing chemicals and waste management beyond 2020. [...] The idea to use sustainable chemistry as an assessment framework for evaluating the contributions of chemicals to the SDGs received the strongest support (93% agreement). The results of the survey indicate that a large majority of respondents strongly agreed [...] that the sustainable chemistry concept encompasses the following:

- Identification and assessment of chemicals and non-chemicals alternatives for chemicals of concern (95 % agreement)
- Traditional chemical management tools, such as chemical hazard assessment, risk assessment and risk management (95 % agreement)
- Advancing technology transfer for safe chemicals and non-chemical alternatives (95 % agreement)
- Scaling up innovation through universities, start-up companies, and the chemical industry (91% agreement)
- Reforming chemistry curricula to integrate green chemistry and sustainable development (90% agreement)
- Use of economic instruments and innovative financing to advance innovation (82% agreement)".

To promote the development of a common understanding of sustainable chemistry, the ISC₃ has drawn up a thought-starter as a starting point for a broader cross-sectoral dialogue, here attached in the following annex. The thought-starter invites you to voice your expectations towards a common understanding of sustainable chemistry. With the development of a common understanding, the ISC₃ thrives to integrate different perspectives and provide a sound contribution to the implementation of sustainable chemistry approaches on the international and national level.

Annex

Developing a Common Understanding of Sustainable Chemistry

Developing a common understanding of sustainable chemistry is an important prerequisite for the full and coherent implementation of the new transformative concept. To address the different perspectives, expectations and criteria discussed in the context of sustainable chemistry, the ISC₃ seeks to initiate a stakeholder dialogue process towards a common understanding of sustainable chemistry.

As a starting point for a stakeholder dialogue process, the ISC₃ prepared a thought-starter on the key aspects that should be taken into consideration for the development of a common understanding of sustainable chemistry. The thought-starter invites you to voice your expectations, raise awareness for your concerns and give your ideas to draw up a common understanding of sustainable chemistry. Further information on the dialogue is available on the ISC₃ website: www.isc3.org

Thought-Starter “Thriving towards a Common Understanding of Sustainable Chemistry”

Sustainable Chemistry is a long-term global process that transforms chemicals management, substances, processes, services and innovations to serve the Agenda 2030 for Sustainable Development and its goals (SDGs). Sustainable Chemistry needs the commitment of all stakeholders and sectors using or dealing with chemicals.

Sustainable Chemistry is a new systems thinking approach that is based on the following elements of a common understanding:

- Sustainable Chemistry is a holistic systems approach addressing all aspects of sustainability. It seeks to optimize the different sustainability aspects of chemicals⁸ throughout their life-cycle, including their supply chain origin, design, raw material extraction, production, use and re-use as well as waste management (including recycling) for the benefits of our societies and the planet.
- Sustainable Chemistry aims to avoid transfers of problems along the life-cycle of chemicals and chemical products into other domains, spheres, regions and products and does not exceed the ecological planetary boundaries.
- Sustainable Chemistry builds on the experience of Green Chemistry and supports the implementation of a circular economy by aiming to close all material cycles. At the same time, it creates a less toxic environment by using the most efficient, effective, safe and environmentally benign solutions.

⁸ In this context, the term “chemicals” includes chemical substances, chemical mixtures and chemical materials

- Sustainable Chemistry requires at every moment that all sectors interacting with chemicals are protecting human health, the environment, bio-diversity, resources and climate.
- Sustainable Chemistry provides the frame to identify, assess and promote chemical innovations and innovative business models that contribute to the Agenda 2030. Moreover, it contributes to the SAICM⁹ objectives and a pollution free planet.
- Sustainable Chemistry creates new economic opportunities and benefits for our societies and is particularly relevant for the sustainable development of industries in developing countries and emerging economies.
- Sustainable Chemistry innovation will be a key solution provider for the global energy, agriculture, mobility, water and urbanization challenges as well as for the implementation of the 2015 Paris Agreement endorsed by global leaders as response to the threat of climate change.

Sustainable Chemistry addresses the following objectives throughout the transformation process and includes all chemical substances, processes, services, innovations and business models throughout the life-cycle:

- Maximizing the benefits for our societies and at the same time minimizing the harm to human health and environment.
- High level of protection of workers and consumers through high material, product and process standards.
- Identification, promotion and support of transformative and viable business models based on transparent sustainability assessments and decisions.
- Transparency about substances, products, processes and services throughout the life-cycle by means of adequate, easily accessible and understandable information for all people.
- Application of the precautionary principle and consideration of non-chemical alternative solutions.
- Comprehensive application of inter-related and globally important issues such as scientific research, education, gender mainstreaming, consumer awareness, international fair trade and sustainable financing, as well as corporate social responsibility and sustainable entrepreneurship as Sustainable Chemistry is a holistic systems approach.

Join the dialogue and send your comments to:

Ms Creta Gambillara, Policy Manager, creta.gambillara@isc.org / +49.228.9041.127
ISC₃, Simrockstraße 5, D-53113 Bonn, Germany

For further information on the dialogue towards a common understanding of sustainable chemistry please visit our website: www.isc3.org

⁹ Innovative and sustainable solutions, re-use of products, new technologies and business models as well as sustainable production principles and life cycle management in the product design etc. are aspects characterizing the concept of sustainable chemistry which are explicitly mentioned as targets (strategic objective D "Benefits are maximized and risks to human health and environment are prevented through innovative and sustainable solutions and forward thinking.") in the Appendix to the Paper by the Co-chairs of the Intersessional Process on the Strategic Approach to International Chemicals Management (SAICM) and the sound management of chemicals and waste beyond 2020.

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Chemicals Management**

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Item 3 of the provisional agenda*

**The Strategic Approach and the sound management of
chemicals and waste beyond 2020**

Resolutions adopted at the fourth session of the United Nations Environment Assembly

Note by the secretariat

1. A number of relevant resolutions were recently adopted at the fourth session of the United Nations Environment Assembly that took place from 11-15 March 2019 in Nairobi, Kenya. The secretariat has the honour to share in the Annex to the present note the resolutions adopted on the sound management of chemicals and waste as well as environmentally sound management of waste.
2. Other related resolutions were adopted, including on marine plastic litter and microplastics as well as addressing single-use plastic products pollution. All UNEA resolutions may be found at the following link: <http://web.unep.org/environmentassembly/ministerial-declaration-resolutions-and-decisions-unea-4>

* SAICM/OEWG.3/1.

Annex

UNEP/EA.4/L.9 Sound management of chemicals and waste*

Submitted by the European Union and its member States, the African Group and Switzerland

The United Nations Environment Assembly,

Recalling the 2030 Agenda target 12.4 to "By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water, and soil in order to minimize their adverse impacts on human health and the environment",

Emphasizing the cross-cutting relevance of the sound management of chemicals and waste to achieve numerous goals and targets of the 2030 Agenda, including those on health,

Expressing strong concern over the present situation, trends and challenges, as reflected in the Global Chemicals Outlooks, the Global and Regional Waste Management Outlooks, the Global Mercury Assessment 2018, and the Global Environment Outlook 6, which show insufficient progress and that it is unlikely that target 12.4 will be achieved by 2020,

Aware that the production and use of chemicals in the world is expected to increase threefold and that the global use of materials has been estimated to more than double by 2050,

Recalling the need for effective implementation of the global chemicals and wastes conventions and the Strategic Approach to International Chemicals Management (SAICM); and emphasising the importance of the SAICM Overall Orientation and Guidance for achieving the 2020 goal, as endorsed by the International Conference on Chemicals Management,

Emphasizing the importance of strengthening the science-policy interface and the global evidence base for chemicals,

Stressing the urgent need to strengthen the science-policy interface at all levels to support and promote science-based local, national, regional and global action on sound management of chemicals and waste beyond 2020; use of science in monitoring progress; priority setting and policy making throughout the life cycle of chemicals and waste, taking into account the gaps and scientific information in developing countries,

Noting the initiatives under the Basel Convention and the activities conducted by the Basel and Stockholm Regional Centres to address the pressing issue of marine plastic litter and microplastics,

1. *Urges* Governments, industry and the private sector, civil society, the scientific and academic community and all other relevant stakeholders to intensify and prioritise efforts on the sound management of chemicals and waste, towards the achievement of target 12.4 of the 2030 Agenda for Sustainable Development;

2. *Emphasizes* the need for urgent and resolute action at all levels to implement the 2030 Agenda on these matters, including through an improved enabling framework for the sound management of chemicals and waste in the long term, in line with UNEA resolutions 1/5, 2/7 and 3/4; and welcomes the initiative of the High Ambition Alliance on Chemicals and Waste in this regard;

3. *Highlights* the importance of minimizing and preventing when feasible hazardous substances in material cycles and managing chemicals in products throughout their lifecycle, from the design to the waste phases, in order to adapt production and consumption models to achieve sustainable consumption and production, including but not limited to circular economy and other sustainable economic models;

4. *Underlines* the importance of waste prevention and minimization at source through, *inter alia*, the minimization of packaging materials and the discouragement of planned obsolescence of products, as well as improving products reusability and recyclability and resource efficiency through, *inter alia*, better design and use of secondary raw material;

* The present document is being issued without formal editing.

5. *Welcomes* the Global Chemicals Outlook-2; and highlights its potential to contribute to the chemicals science-policy interface in the future;
6. *Looks forward* to the upcoming Global Waste Management Outlook-2, including its information on and consideration of the product, chemicals and waste interface; as well as the complementarity and interlinkages with relevant developments and policies, for example in relation to plastics and marine litter;
7. *Welcomes* the analysis of best practices in sustainable chemistry by the United Nations Environment Programme and recognises the value to develop a better understanding of sustainable chemistry opportunities globally;
8. *Also welcomes* the evaluation of the implementation of the integrated approach to address the financing of the sound management of chemicals and waste; notes with appreciation the establishment and operation of the Special Programme, encourage member states in a position to do so, especially developed countries to scale up financing and encourages countries to promote and further increase mainstreaming in national budgets and sector policies as well as the involvement of industry and the private sector and the allocation of responsibilities to them;
9. *Encourages* the involvement of all relevant stakeholders, including industry, in strengthening the science-policy evidence in this area, including consideration of relevant socioeconomic aspects;
10. *Underlines* the importance of cooperation and coordination between the secretariat of the Minamata Convention and the joint secretariat of the Basel, Rotterdam and Stockholm Conventions as appropriate and agreed by their respective COPs for the sound management of chemicals and waste;
11. *Welcomes* the decisions on coordination and cooperation between the Minamata Convention and the Basel, Rotterdam and Stockholm Conventions taken by the Conferences of the Parties to these conventions, including Minamata Convention decision 2/7, which inter alia requested the Executive Director to present a proposal for a stable framework on the sharing of services between the secretariats of these conventions, for consideration by the Conference of the Parties to the Minamata Convention, and invited the BRS COPs to also consider such proposal.
12. *Calls on* governments and all other relevant stakeholders, including United Nations agencies as appropriate, industry and the private sector, civil society and the scientific and academic communities, to:
 - (a) Take into account the SAICM Overall Orientation and Guidance in efforts towards the achievement of the 2020 goal;
 - (b) Follow up on the conclusions and recommendations of the Global Chemicals Outlook II, building on the Global Chemicals Outlook 1, the Global Waste Management Outlook 1 and the Regional Waste Management Outlooks completed to date;
 - (c) Address the importance of the product, chemicals and waste interface in relevant legislation and regulatory frameworks, where appropriate;
 - (d) Improve the information of chemicals in products in consumer goods as well as throughout the supply chain;
 - (e) Support technical assistance and capacity building for implementation of the integrated approach to financing, for example through contributions to the Special Programme, as part of official development aid or through business to business cooperation;
 - (f) Encourage all stakeholders involved in the sound management of chemicals and waste, to seek the establishment of permanent programs of information directed to consumers and the public in general, on the risks generated by chemicals and raise awareness of the responsibilities related to the management;
 - (g) Support relevant science-policy interface platforms, including input from academia, and to enhance cooperation in the environment and health areas; and consider at the SAICM OEWG3 and at the intersessional process on the sound management of chemicals and waste beyond 2020 ways of strengthening science-policy interface, including its relevance for implementation of multilateral environmental agreements at the national level;

(h) Engage in the discussions launched following UNEA resolution 1/5 and ICCM resolution IV/4, including the preparation of recommendations for the sound management of chemicals and waste beyond 2020;

(i) Take note of the achievements of the Basel, Rotterdam, Stockholm and Minamata Conventions in contributing to the sound management of chemicals and wastes, and take actions to reduce waste generation at source, manage waste in an environmentally sound manner in the country where it is generated, minimize the transboundary movements of waste, and develop and implement, as appropriate, national legal instruments to control the export and import of chemicals and waste;

(j) Join in the pursuit of an improved enabling framework for the sound management of chemicals and waste, including through information of and consideration by UN bodies related to the 2030 Agenda for Sustainable Development, such as the High Level Political Forum and the UN General Assembly, as appropriate;

13. *Invites* the SAICM Open-Ended Working Group to prepare the ground for relevant resolutions of the International Conference on Chemicals Management at its fifth meeting regarding a crosscutting and holistic approach to the sound management of chemicals and waste in the long term, including enhanced involvement of all relevant stakeholders, taking into account UNEA resolutions 1/5, 2/7 and 3/4;

14. *Requests* the Executive Director, subject to the availability of resources and, where appropriate, in cooperation with the member organizations of the Inter-Organisation Programme for the Sound Management of Chemicals (IOMC), to:

(a) Step up the technical assistance and capacity building to Member States to meet relevant goals and targets of the 2030 agenda as soon as possible, including for improved access to scientific information strengthening the science-policy interface at the national level, taking into account the SAICM Overall Orientation and Guidance and the multi-sectoral and multi-stakeholder nature of the sound management of chemicals and waste;

(b) Strengthen cooperation and avoid duplication of actions undertaken by each IOMC organisation, under their own mandates, towards the achievement of target 12.4 and all other goals and targets of the 2030 Agenda impacted by the sound management of chemicals and waste, as an essential element to improve the current multilateral framework on this matter;

(c) Enhance the support to the Strategic Approach to International Chemicals Management in preparation of the fifth meeting of the International Conference on Chemicals Management, including with sufficient staff and resources for the SAICM Secretariat, in view of its role as decided by the ICCM for the improved enabling framework for the sound management of chemicals and waste;

(d) Synthesize UNEP's analysis of best practices in sustainable chemistry into manuals on green and sustainable chemistry, in consultation with relevant stakeholders, by UNEA5, and to continue the work on a holistic approach for the sound management of chemicals and waste in the long term, taking into account both the importance of the sound management of chemicals and the potential benefits of chemicals for sustainable development;

(e) Follow the trends in the design, production, use and release of chemicals and the generation of waste in order to identify issues of concern in future Global Chemicals and Waste Management Outlooks and catalyse sound management actions;

(f) Prepare a report by 30 April 2020 on relevant issues where emerging evidence indicates a risk to human health and the environment identified by SAICM, the GCO and under sub-paragraph (e) above, including an analysis of existing regulatory and policy frameworks and their ability to address these issues towards the achievement of the 2020 goal, in particular for lead and cadmium;

(g) Prepare by 30 April 2020 an assessment of options for strengthening the science-policy interface at the international level for the sound management of chemicals and waste, taking into account existing mechanisms, including under UNEP, and relevant examples in other areas, in order to maximise cost-effectiveness, make best use of new technologies, track progress and improve implementation of relevant multilateral environmental agreements at the national level, and to make it available for consideration by all stakeholders prior to ICCM-5;

(h) Provide technical advice, policy support and capacity building to developing countries and countries with economies in transition, particularly in order to put in place the necessary

legislative and regulatory frameworks and to mainstream sound management of chemicals and waste in national development plans, domestic budgets and relevant sector policies; and to further encourage industry and private sector involvement throughout the value chain, including through designated responsibilities and measures to promote cost recovery and the polluter pays principle;

(i) Report to the United Nations Environment Assembly, at its fifth session, on the implementation of the present resolution, as well as on the implementation of the programme of work activities with respect to chemicals and waste; and to make a progress report available for ICCM-5.

UNEP/EA.4/L.8 Environmentally sound management of waste*

Submitted by the League of Arab States, Chile, Sri Lanka and Turkey

The United Nations Environment Assembly,

Appreciating UNEA 4's focus on Innovative Solutions for Environmental Challenges and Sustainable Consumption and Production,

Recalling General Assembly resolution 66/288 of 27 July 2012, on the outcome document of the United Nations Conference on Sustainable Development, entitled "The future we want" in particular those paragraphs relevant to sound management of chemicals and waste as well as those on sustainable consumption and production, and recognizing the relevance of encouraging changes on the patterns societies consume and produce as an important means for achieving global sustainable development,

Recalling also General Assembly resolution 70/1 of September 2015, entitled "Transforming our world: the 2030 Agenda for Sustainable Development",

Recognizing the international community's commitment to the sound management of waste and its significant contribution to the sustainable development goals (SDGs),

Recalling previous UNEA resolutions addressing the issue of solid waste management among other topics,

Recognizing that resource efficiency and waste management are relevant policy topics to achieve sustainable consumption and production, including but not limited to a circular economy and other sustainable economic models, and recognizing as well the co-benefits of a sound waste management policy in areas such as GHG emissions reduction, improving human health, appropriate food management, and marine environment protection;

Noting that solid waste management has yet to be given sufficient attention in many member states as a key environmental issue of concern,

Recognizing that 10% of the waste generated in the world are plastics, and 500 billion plastic bags are used within a year around the world,¹

Realizing that challenges associated with solid waste management include, but are not limited to, prioritizing waste prevention adopting or selecting relevant technologies, establishing local institutional and/or regulatory frameworks, and developing and managing information and tracking systems and the particular needs of countries in post-conflict situations or countries affected by conflicts,

Acknowledging the success stories of member states in developing and implementing innovative solid waste management solutions, technologies and engagement of local constituents, including innovative projects/programmes such as national and local Zero Waste initiatives in some countries to foster environmentally sound management of waste, particularly minimization and where feasible prevention of waste,

Appreciating UNEP's International Environment Technology Centre (IETC) and its activities including the production of Global and Regional Waste Management Outlook and Global Mercury Waste Assessment and expecting its further works in the field of the environmentally sound waste management,

1. *Invites* member states, considering differing national circumstances, and in cooperation with relevant national, regional and international organizations and institutes to:

(a) Promote the integrated approaches of solid waste management through sustainable consumption and production, including but not limited to a circular economy and other sustainable economic models, as well as other innovative means, including the removal of hazardous substances from waste before recycling, as well as giving special attention to prepare waste for reuse and recycling, as well as the reduction of landfilling and application of the waste hierarchy for all waste;

* The present document is being issued without formal editing.

¹ UNEP (2015) Global Waste Management Outlook; and UNEP (2018) World Environment Day 2018: Overview.

- (b) Prevent and reduce waste at source of origin through, inter alia, the minimisation of packaging materials and the discouragement of planned obsolescence of products, as well as improving products safety, reusability and recyclability and resource efficiency through, inter alia, better design of products, use of easy to recycle materials, and use of secondary raw material in replacement, where feasible of primary raw material;
- (c) Effectively engage the private sector, civil society, waste producers, local authorities and the public, and promote public private initiatives and alliances, in the sound management of solid waste including through market mechanisms and capacity building to promote sustainable consumption and production, including but not limited to a circular economy and other sustainable economic models;
- (d) Support the development or, where appropriate, the enhancement of adequate institutional and regulatory frameworks to ensure that roles and responsibilities are clearly defined;
- (e) Work towards establishing indicators and conducting on a regular basis assessments of impacts of selecting and implementing technological options to address waste management along the value chain with the objective of protection of health and environment;
- (f) Promote use of modern technologies, innovations and innovative policy alternatives to support environmentally sound management of solid waste, and the development of economic instruments and other measures to support waste management, green entrepreneurship and generation of green jobs;
- (g) Support the innovative waste management initiatives such as national and local zero waste initiatives in some countries to minimize and develop adequate infrastructure and other facilities for waste management;
- (h) Promote public and private sector waste management innovative financing solutions such as:
 - (i) Development of innovative financial models and creation of enabling environment for investment and market-based schemes
 - (ii) Support for job/income generation schemes
 - (iii) Cost recovery schemes;
- (i) Implement and support innovative economic incentive schemes to promote sound management of waste such as, extended producer/ trader responsibility, recycling incentives, deposit refund schemes, and other alternatives;
- (j) Promote evidence-based research on environment and health benefits of environmentally sound waste management;
- (k) Develop and/or encourage innovative programs and tools for raising awareness;
- (l) Set standards for food grade plastics, to minimize toxins getting in to food;
- (m) Strengthen monitoring activities to avoid disposal of waste into the marine environment from all sectors;
- (n) Reduce microplastics, including in wastewater treatment plants, and encourage producers to use alternatives for microbeads;
- (o) Strengthen legislation to prohibit open burning of plastics to avoid air pollution and its associated health impacts;
- (p) Support the recycling of plastics including the improvement of waste collection, transportation and recycling infrastructure;

2. *Requests* the Executive Director, subject to the availability of resources, and in cooperation with relevant international partners to:

- (a) Strengthen UNEP's International Environment Technology Centre (IETC) and its role in provision of technological advice and capacity building on the environmentally sound waste management and enhance cooperation with Basel and Stockholm regional centres as appropriate;

- (b) Maintain inventories of environmentally sound waste management technologies and practices including those which have been introduced in the global and regional waste management outlook to share with member states;
 - (c) Assist member states in use of BAT/BEP (Best Available Techniques and Best Environmental Practices) in solid waste management;
 - (d) Continue to foster sharing experiences, lessons learned and success stories amongst Member States and key stakeholders through existing global and regional platforms;
 - (e) Coordinate with member states and relevant UN and humanitarian agencies to incorporating, as appropriate and feasible, waste management in humanitarian recovery and response plans “building back better”;
 - (f) Assist countries, in particular developing countries and countries with economies in transition, in their efforts to strengthen and enhance national and local implementation of environmentally sound management of waste, through the regional waste management outlooks, improving information on environmentally sound technologies to integrate waste management;
3. Call upon member states in the position to do so, especially developed countries, international organizations and international financial institutions to provide developing countries and countries with economies in transition, in particular those in conflict, financial assistance, capacity building and promotion of technology transfer based on mutually agreed terms for the purposes of implementation of this resolution.
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**Strategic Approach
to International
Chemicals Management**

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**Open-ended Working Group of the International Conference
on Chemicals Management**
Third meeting
Montevideo, 2–4 April 2019

List of pre-session documents organized by agenda item for Open-ended Working Group (OEWG-3)

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a list prepared by the secretariat on the list of pre-session documents organized by agenda item for open ended working group (OEWG-3). The list is presented in the annex.

Annex

List of pre-session documents organized by agenda item for Open-ended Working Group (OEWG-3)

Item 2: Organizational matters	
Item 2(a): Adoption of the agenda	
SAICM/OEWG.3/1	Provisional agenda
SAICM/OEWG.3/1 Add1	Annotations to the provisional agenda
Item 2(b): Organization of work	
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Item 3(b): Considerations for the sound management of chemicals and waste beyond 2020	
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(i) Preparation of recommendations for the fifth session of the International Conference on Chemicals Management	
SAICM/OEWG.3/4	Paper by the Co-Chairs of the intersessional process on the SAICM to International Chemicals Management and the sound management of chemicals and waste beyond 2020
Information documents	

SAICM/OEWG.3/INF/2	Sound management of chemicals and waste beyond 2020, annotated paper prepared by the co-chairs
SAICM/OEWG.3/INF/3	GCO II Summary for Policymakers
SAICM/OEWG.3/INF/15	IOMC plans for future actions to implement the goals and targets of the 2030 Agenda
SAICM/OEWG.3/INF/19	Global Chemicals Outlook II Synthesis Report: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development
SAICM/OEWG.3/INF/21	A submission by the International Panel on Chemical Pollution - Strengthening the Science-Policy Interface in International Chemicals Governance
SAICM/OEWG.3/INF /25	Global Chemicals Outlook II: From Legacies to Innovative Solutions – Implementing the 2030 Agenda for Sustainable Development
SAICM/OEWG.3/INF/27	A submission from the German Environment Agency – Paper on Global Governance of Chemicals and Waste
SAICM/OEWG.3/INF/29	A submission from the Nordic Council of Ministers - Report on the Investigation of legally binding elements in support of the global post 2020 framework for chemicals and waste
SAICM/OEWG.3/INF/31	Submission from the International POPs Elimination Network (IPEN): (i) IPEN Beyond 2020 Perspectives for OEWG3; (ii) IPEN Views of SAICM OEWG3; and (iii) IPEN infographic on key elements for an Enabling Framework
SAICM/OEWG.3/INF/34	Zero Discharge of Hazardous Chemicals (ZDHC): How collective action is transforming the textile industry in a proactive and systemic way
SAICM/OEWG.3/INF/35	Submission of the United Nations Institute for Training and Research (UNITAR): Summary outcome document of the stakeholder workshop on strengthening governance for the sound management of chemicals and waste beyond 2020
SAICM/OEWG.3/INF/36	Submissions from the International Sustainable Chemistry: Collaborative Centre (ISC3): (i) Driving transformation towards sustainable chemistry through innovation and entrepreneurship - the ISC3 global start-Up service; and (ii) Reaping the full potential of sustainable chemistry for SAICM, the sound management of chemicals and waste beyond 2020 and the 2030 Agenda
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Information documents	
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1. SAICM/OEWG.3/5	Summary report on progress in the implementation of SAICM for the period 2014–2016 and analysis of the 20 indicators of progress
Information documents	
SAICM/OEWG.3/INF/4	Report on progress in the implementation of the Strategic Approach for the period 2014–2016 and analysis of the 20 indicators of progress
SAICM/OEWG.3/INF/6	Activities of the IOMC to support SAICM to International Chemicals Management (SAICM) Implementation
SAICM/OEWG.3/INF/7	Cooperation and coordination between the secretariat of the Minamata Convention and the Strategic Approach
SAICM/OEWG.3/INF/8	Cooperation and coordination between the secretariats of the Basel, Rotterdam and Stockholm conventions and the Strategic Approach update report on Strategic Approach implementation
SAICM/OEWG.3/INF/17	Report of the ICCA-UN Environment Symposium on Sound Management of Chemicals and Waste and the Circular Economy, 11 – 13 September 2018, Chengdu, China
SAICM/OEWG.3/INF/18	Proposal by the Organisation for Economic Co-operation and Development (OECD) for a new Inter-Organization Programme for the Sound Management of Chemicals (IOMC) indicator for measuring progress with the sound management of chemicals and waste
SAICM/OEWG.3/INF/22	Analysis of Stakeholder Submissions on Sustainable Chemistry Pursuant to UNEA Resolution 2/7
SAICM/OEWG.3/INF/23	Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes
SAICM/OEWG.3/INF/26	World Health Organization Report on Progress in the Implementation of the Strategic Approach for the period 2014-2016
SAICM/OEWG.3/INF/28	Submission of the International Council of Chemical Associations (ICCA) and the United Nations Environment Programme (UNEP): Knowledge Management and Information Sharing for the Sound Management of Industrial Chemicals
SAICM/OEWG.3/INF/30	Report by the World Health Organization (WHO) on the circular economy and health: opportunities and risks (2018)

Item 4(b): Overall orientation and guidance towards the 2020 goal	
Information documents	
SAICM/OEWG.3/INF/5	Report on progress in the implementation of the overall orientation and guidance for achieving the 2020 goal of sound management of chemicals
SAICM/OEWG.3/INF/32	SAICM Knowledge Management Strategy
Item 4(c): Emerging policy issues and other issues of concern	
SAICM/OEWG.3/6	Emerging policy issues and other issues of concern
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SAICM/OEWG.3/INF/9	Emerging policy issues - IOMC response to requests from the fourth session of the International Conference
SAICM/OEWG.3/INF/16	A submission from the United Nations Environment Programme: United Nations Environment Assembly resolutions on marine litter and microplastics and the relevance to the Strategic Approach to International Chemicals Management
SAICM/OEWG.3/INF/20	Lead in Paint
SAICM/OEWG.3/INF/24	Annex to International Conference on Chemicals Management resolution II/4 - Modalities for considering emerging policy issues
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SAICM/OEWG.3/INF/10	Report on the WHO Chemicals Road Map and Global Chemicals and Health Network
Item 4 (e): Financing of the Strategic Approach	
SAICM/OEWG.3/7	Report on the Quick Start Programme and its trust fund
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SAICM/OEWG.3/INF/12	Report on the Special Programme to support institutional strengthening at the national level for implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention and the Strategic Approach to International Chemicals Management
SAICM/OEWG.3/INF/13	Report of the Global Environment Facility

Item 5: Planned activities and draft budget of the secretariat for the period 2019–2020	
SAICM/OEWG.3/8	Budget, activities and staffing of secretariat (for 2019-2020)
Item 6: Preparations for the fifth session of the International Conference on Chemicals Management.	
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SAICM/OEWG.3/INF/14	ICCM5 preparations
Item 7: Other matters	
None	
Item 8: Adoption of the report of the meeting	
None	
Item 9: Closure of the meeting	



SAICM/OEWG.3/INF/39

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**Strategic Approach
to International
Chemicals Management**

**Open-ended Working Group of the International Conference
on Chemicals Management**

Third meeting

Montevideo, 2–4 April 2019

Item 4(c) of the provisional agenda*

**Progress towards the achievement of the 2020 overall
objectives of the sound management of chemicals:**

Emerging policy issues and other of concern

**Submission from the Pesticide Action Network Asia Pacific (PAN
Asia Pacific):**

**Highly Hazardous Pesticide Use and Impacts in Asia: The Need for
Legally Binding Protocols Beyond 2020**

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a report received from the Pesticide Action Network Asia Pacific (PAN Asia Pacific), on the highly hazardous pesticide use and impacts in Asia: the need for legally binding protocols beyond 2020. The report is presented in the annex as received from PAN Asia Pacific and has not been edited by the secretariat.

* SAICM/OEWG.3/1.

Highly Hazardous Pesticide Use and Impacts in Asia: The Need for Legally Binding Protocols Beyond 2020



A survey of 2025 small-scale farmers and agricultural workers was carried out in **7 Asian countries**: Bangladesh, India, Indonesia, Malaysia, Pakistan, Philippines, Vietnam

Poisoning & Use of Highly Hazardous Pesticides (HHPs)

- **7 out of every 10 farmers** were suffering from symptoms of **acute pesticide poisoning**.
- **50 HHPs** were in use, including benomyl, butachlor, carbendazim, carbofuran, carbosulfan, chlorfluazuron, chlorthalonil, chlorpyrifos, diazinon, dichlorvos, lambda-cyhalothrin, malathion, monocrotophos, paraquat, trichlorfon.

Conditions of Use

- Users often **lacked information** on the pesticides they used; retailers sold pesticides in unlabeled plastic bags; or the plantation management provided workers pesticides without the labels.
- In 5 out of 7 countries, **majority did not use**

Personal Protective Equipment when handling pesticides.

- Majority (80%) had **direct contact with pesticides**. Pesticide spills were due to defective containers and leaky sprayers; or decanting of pesticides. Almost half (43%) sprayed pesticides against the wind direction.
- Pesticides were **stored in homes** near food items; **empty containers were re-used or improperly disposed of** by burying and burning.

Responsibilities

- The International Code of Conduct was violated by the agrochemical industry and governments.
- The following human rights were extensively violated: **right to life and health; right to access to information; right to a safe and healthy environment**; right to livelihood; as well as **children's rights, women's rights, and indigenous peoples' rights**.
- PAN Asia Pacific (PANAP) holds agrochemical TNCs and their subsidiaries, and local pesticide manufacturers and distributors accountable for these human rights abuses.
- PANAP finds that the existing global governance of pesticides is woefully inadequate.

RECOMMENDATIONS

- **A global legally binding treaty, or protocol within a global overarching chemicals framework, for the life-cycle management of pesticides**, including the phasing-out of HHPs and stopping the double standard of exporting banned pesticides

INTRODUCTION

The report *Of Rights and Poisons: Accountability of the Agrochemical Industry* synthesises key findings by PAN Asia Pacific and its partners on the use of Highly Hazardous Pesticides (HHPs). The focus of the research is on the HHPs and the conditions of their use, including health and environmental effects, as reported primarily by small-scale farmers and agricultural workers across the Asia Pacific region.

Covering seven countries—Bangladesh, India, Indonesia, Malaysia, Pakistan, Philippines, and Vietnam—the report highlights how pesticides use and exposure leads to violations to the right to life and health; right to access to information; right to a safe and healthy environment; right to livelihood; as well as children’s rights, women’s rights, and indigenous peoples’ rights. It focuses on the accountability of agrochemical transnational companies and their subsidiaries, as well as local pesticide manufacturers and distributors producing and distributing HHPs.

This report presents the reality that the existing global governance of pesticides is inadequate and that the Sound Management of Chemicals cannot be achieved by 2020 and will not be achieved by 2030 unless there are dramatic improvements in this governance. As the Strategic Approach to International Chemicals Management (SAICM) ends, there is an opportunity to develop an ambitious international framework to prevent and eliminate adverse impacts on the health of people and the environment, across the lifecycle of chemicals and wastes. PAN Asia Pacific joins the UN Special Rapporteur on the right to food in proposing a global legally binding treaty for the life-cycle management of pesticides, including the phasing out of

HHPs, as a decisive step to address the problem of pesticide use at the global level.



Backpack sprayer in Bangladesh without proper Personal Protective Equipment (Photo by BARCIK)

PROCESS AND METHODS

The report was based on a review of primary source documents from various partner organisations in Bangladesh, India, Indonesia, Malaysia, Pakistan, Philippines, and Vietnam. Over-all findings were synthesised from a total of 15 reports covering the research period of 2015 to 2017.

A total of 2,025 respondents participated in the study. Respondents were in general, small-scale farmers or farm workers for large-scale plantations who were into the production of oil palms, grains, fruits, vegetables, and flowers. Most were aged 30 to 59 years old, and were elementary school graduates.

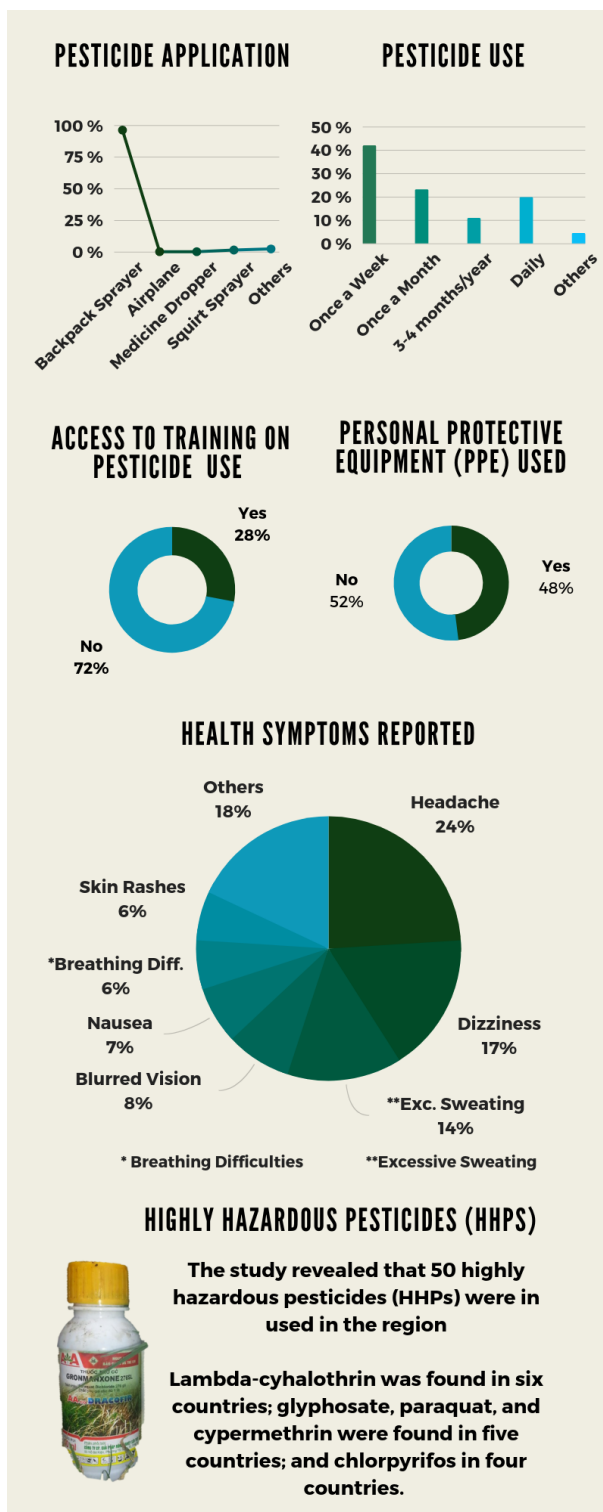


Figure 1

Data was gathered through fact-finding missions (FFMs) and Community-based

Pesticide Action Monitoring (CPAM). CPAM is a participatory process developed by PANAP and its partners, by which community leaders and volunteers are trained to document the conditions of pesticide use, impacts, sales, distribution and advertisement. It builds awareness on the health and environmental hazards of chemical pesticides, organises communities and encourages action.

CPAM makes use of a pre-designed survey instrument. The community makes use of and adapts the various survey components according to their local situations and concerns. Interviews are done in the local language. The CPAM team also does direct observations and focused-group discussions to clarify information and to go deeper into concerns.

In FFMs, teams were sent to troubled areas to investigate, verify reports, gather and validate information. These investigations were usually followed by the application of more comprehensive data gathering tools and CPAM.

While data was obtained using a standard questionnaire, data sets collected varied because of the different situations in the study sites. Thus, the number of responses changed depending on the question and on the local partners' degree of data disaggregation. Missing data could not be avoided in cases where respondents could not identify the pesticides they were using because the labels had been removed; the retailers sold pesticides in unlabeled plastic bags; or the plantation management provided workers pesticides without the labels. Whenever possible, the investigating teams cross-checked the information with individual farmers, and/ or the available pesticide containers and packaging.

STUDY SITES

The monitoring was undertaken in the following sites with participating communities and organisations:

Bangladesh

The Bangladesh Resource Centre for Indigenous Knowledge (BARCIK) looked into the conditions of pesticides use and its impacts on the health of farmers and residents of five rice and vegetable-growing communities in Satkhira District.

India

PAN India carried out investigations to determine the (i) conditions of paraquat use in Andhra Pradesh, Arunachal Pradesh, Assam, Madhya Pradesh, Telangana and West Bengal; (ii) practices of sale and usage of paraquat in West Bengal; (iii) the state of use and regulation of the herbicides atrazine, glyphosate and paraquat, and the insecticides chlorpyrifos and fipronil in Himachal Pradesh, Jharkhand, Karnataka, Tamil Nadu, Telangana and West Bengal. A FFM was also carried out to find out the root cause of the pesticide poisonings in Maharashtra's Yavatmal District.

Sahanivasa looked into pesticide use, impacts, and conditions of sale in Chittoor District of Andhra Pradesh. It focused on small-landholder farmers, workers and daily wage earners in mango orchards. Meanwhile, the Society for Rural Education and Development (SRED) investigated the conditions of children flower harvesters working in floriculture farms in Tiruvallur District, Tamil Nadu.

Indonesia

Organisasi Penguatan dan Pengembangan Usaha-Usaha Kerakyatan (OPPUK) investigated pesticide use in four palm oil plantations in North Sumatra, focusing on impacts on workers, particularly women sprayers.

Malaysia

Women's Force (Tenaganita) conducted CPAM in three oil palm plantations in the Kuala Langat and Kuala Selangor Districts, Selangor, focusing on women sprayers.

The Partners of Community Organisations in Sabah (PACOS Trust) carried out investigations in three indigenous communities living within the vicinity of palm oil plantations in the towns of Telupid, Tongod, and Keningau in Sabah.

The North South Initiative (NSI) meanwhile conducted CPAM in Tanjung Karang, Kuala Selangor District, Selangor among small-holder rice and vegetable farmers.

Pakistan

The Khoj-Society for People's Education conducted CPAM in 13 villages and one town in the rice and wheat district of Sheikhpura, Punjab province.

Philippines

Together with PAN Philippines, Kilusang Magbubukid ng Pilipinas (KMP), and other local partners, PANAP conducted several FFMs to investigate the condition of banana and oil palm plantation workers and communities exposed to aerial spraying in four provinces of Mindanao – Davao del Sur, South Cotabato, Agusan del Sur, and Bukidnon.

Vietnam

The Centre for Sustainable Rural Development (SRD) undertook the study in two villages with farmers coming from three ethnic tribes in Thai Nguyen province. Meanwhile, the Research Centre for Gender, Family and Environment in Development (CGFED) led their investigation among women farmers of high-yielding rice varieties in Hai Hau District of Nam Dinh province.

RESULTS

Highly Hazardous Pesticides in Use

The study revealed that 50 HHPs were in use in the seven countries. This includes pesticides that are extremely hazardous to children, and are in PANAP's "Terrible Twenty" list of pesticides that are known to cause various adverse effects on children.

The PAN International List of Highly Hazardous Pesticides (HHPs) is based on the following criteria: high acute toxicity, long term toxic effects, endocrine disruptor, high environmental concern (persistent, bioaccumulative, and toxic to aquatic life), hazard to ecosystems, and known to cause a high incidence of severe or irreversible adverse effects.

Lambda-cyhalothrin was found in six countries. Glyphosate, paraquat, and cypermethrin were found in five countries; and chlorpyrifos in four countries. Used in two countries were abamectin, acephate, chlorfluazuron, deltamethrin, dimethoate, emamectin benzoate, glufosinate-ammonium, mancozeb, and validamycin.

The manufacturers of the most common HHPs are Monsanto, Bayer, Syngenta, DuPont, Dow AgroSciences, BASF and Sumitomo. Several Chinese pesticide companies have made their presence increasingly felt in the region, particularly so in Pakistan, where the industry has been taken over by Chinese manufacturers.

Conditions of Use

Pesticide Application & Precautions Taken

Almost all of the respondents in the study (98%) used pesticides at home or at work.

Almost half (48%) were exposed to pesticides via applying or spraying pesticides. Others were exposed through mixing, decanting, and loading of pesticides, and through washing pesticide containers and Personal Protective Equipment (PPE).



*A farmer in India mixes pesticides with his bare hands
(Photo by SRED)*

Most participants from Indonesia, Malaysia, Pakistan, and Philippines had been handling pesticides from 1 to 5 years, while those from Bangladesh, India, and Vietnam have been exposed for a longer period of 6 to 20 years. Almost all (96%) used backpack sprayers to apply pesticides. The study participants usually applied pesticides once a week or once a month. One-fifth applied it daily, which is the common practice in India, Indonesia, Malaysia, and the Philippines. (See Figure 1)

- ***Unsafe Handling and Lack of Personal Protective Equipment***

Pesticide exposures can be reduced by the use of Personal Protective Equipment (PPE), as well as proper mixing and application practices. The International Code of Conduct on the Distribution and Use of Pesticides (The Code) recommend users to wear PPE, defined



Paraquat decanted in plastic bags are sold in retail shops in India (Photo by PAN India)

as “any clothes, materials or devices that provide protection from pesticide exposure during handling or application... it includes both specifically designed protective equipment and clothing reserved for pesticide application and handling.” For manual spraying, the most essential items are boots or covered shoes, a long-sleeved upper garment and garment that cover the legs, and a hat (if spraying high crops). Gloves and eye protection must be worn when pouring, mixing or loading pesticides.

In five out of seven countries (Bangladesh, India, Indonesia, Malaysia, and Pakistan), majority reported that they did not use PPE when handling pesticides. Among the reasons cited were the high cost, lack of awareness on the importance of PPEs, and lack of training on their proper usage. A common complaint was that PPE were uncomfortable to wear due to hot and humid climate. In India, wraparound attire for men in farming such as dhoti or lungi, or sari for women, were substituted for standard PPE items.

Some respondents were issued PPE items by their employers. However, company-issued PPE were not durable enough to last a year.

Workers bought PPE or replacement PPE with their own money. For instance, women workers in Indonesia spent USD 11 to 48 for PPE. With low wages that barely cover their daily expenses, several workers improvised, such the use of bra cups as substitute for masks in the Philippines.

In India, PPE were also not sold or exhibited in pesticide shops as required.

Eighty percent of the respondents had direct contact with pesticides while opening containers, mixing, loading the sprayer, and spraying. Spills were generally attributed to defective pesticide containers (such as loose bottle caps and flimsy packaging), as well as faulty sprayers that leak.

Financial constraints hindered backpack sprayers from repairing their sprayers or buying new ones. They also tend to ignore pesticide spills as they consider the effects of the spillage to be minor; if they itch, they wash themselves in the river and continued to work in their wet clothes.

Spills also happened while selling and buying pesticides decanted in plastic bags or reusable containers. This exposes handlers to direct contact since PPE is not usually worn while selling and buying pesticides. In Pakistan, it was observed that shopkeepers do not use gloves. Sometimes, pesticide bags fall and burst open, scattering the granules. One farmer was witnessed opening a granular pesticide bag using his teeth.

- ***Lack of washing facilities***

Washing facilities were generally not provided in the workplace. Thus, many workers relied on natural water systems (i.e. brooks and creeks), wells and irrigation canals for washing their soiled bodies, work clothes, and equipment. In

worst cases, workers washed near drinking water sources, never washed, or waited to do their washing at home. (See Figure 2)

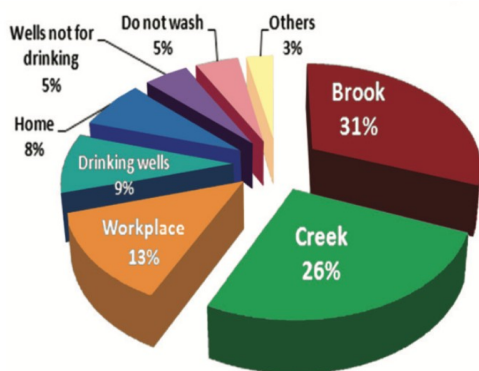


Figure 2: Place where respondents wash their bodies and PPE

- **Spray drift and entering newly sprayed fields**

Many respondents were aware of the need to consider wind direction when spraying pesticides. However, most of them (43%) still sprayed against the wind direction, with only 33% spraying along the wind direction. Some respondents also said that even if they are conscious of the wind movement, they still get sprayed by pesticides whenever there are sudden changes in the wind direction.

A vast majority (92%) of respondents also entered the field within the first three days of spraying, citing urgent work that needed to be done like harvesting or fertiliser application. This was especially the case in the Philippines, where 88% said that they immediately entered a newly sprayed field. This trend is alarming as pesticides usually remain active for 2 to 3 days.

Awareness of Hazards

Majority (72%) of the of the study participants revealed that they did not receive any training on the proper use and handling of pesticides. If

trainings were provided by the plantation management, these usually lasted for only 1 to 2 hours, and usually only consists of instructions to spray pesticides along the wind direction. These trainings do not tackle the names and hazards of the pesticides they are using; neither are workers instructed on what to do in case of spills.

Pesticide sellers also generally do not receive any form of training. Their knowledge is based on the experience and information shared by pesticide manufacturers, farmers and agricultural technicians. Pesticide companies conduct workshops to introduce new products, but only technical information is shared. No information about the hazards or safe use and handling of the chemical is shared.

Pesticide product labels should provide critical information on the handling and use of pesticides to minimise health risks. However, the study showed that 17% of respondents bought pesticides with no labels or safety data sheets.



Illegal pesticides sold in Malaysia have labels written in Chinese. (Photo by NSI)

The reason is that many farmers bought pesticides in inappropriate and unlabelled refill containers or plastic bags. Decanting of pesticides—which poses a high risk to handlers—is a common practice among smallholder farmers, who require only small quantities of pesticides for their crops. In West Bengal,

India, farmers obtain paraquat in small volumes of 100 ml or 200 ml, sold in plastic carry bags. Some employers also provided their workers with pesticide concoctions already decanted in sprayers or jerry cans, with the labels removed.

Pesticide labels, when they are available, could also be hard to read or written in a foreign language. Plantation workers in Indonesia found the labels too small to read, while some respondents were illiterate. In Pakistan, labels were in Urdu and English. Considering that the local language is Punjab and more than half of the respondents are illiterate, such labels could not be read. Unreadable labels were also reported in Vietnam where 11% of the respondents said that the labels were in small print and in a foreign language. In Malaysia, some illegal pesticides were labelled in Chinese.



Spraying equipment are stored in the kitchen along with food items. (Photo by BARCIK)

Storage and Disposal of Containers

The pesticide industry shares responsibilities under the Code in relation to the proper disposal of pesticides and used containers. Government and industry should also cooperate to establish services to collect and safely dispose of used containers.

The country studies revealed the absence of a system to properly dispose unused pesticides, contaminated containers, and PPEs. It is common for the respondents to throw unused pesticides and pesticide containers in open fields. Children were seen wandering in open fields and playing with empty pesticide containers. Pesticide containers are also commonly burned and buried. (See Figure 3)

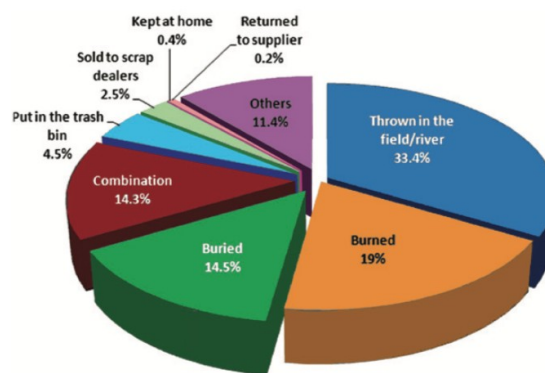


Figure 3: Disposal method of pesticide containers

In India, 70% of respondents reused pesticide containers for storing water and grain. Smaller containers are also reused for packaging items including food, storage of general household items like clothes, utensils, and animal feed.



Empty pesticide containers are used for storing water in some households in Malaysia (Photo by PACOS)



A backpack sprayer from an oil palm plantation in Mindanao, Philippines has skin discoloration due to spillage of paraquat while working. (Photo by PAN Philippines)

Health Effects

The combined country data showed that seven out of 10 persons in the agricultural communities investigated have been ill due to pesticide exposure.

Commonly reported health symptoms were respiratory, integumentary, cardiovascular, gastrointestinal, EENT, and neurological. The top symptoms experienced by respondents were headaches, dizziness, excessive sweating, blurred vision, nausea, breathing difficulty, and skin rashes. (See Figure 1) Other symptoms include chest pains, painful urination, palpitations, calf pains, gastritis, tremors, and

pulmonary secretions. Backpack sprayers who experience direct contact from spillages suffered from burns in the eyes, face and limbs.

In the Philippines, the respondents' households had at least one diseased member suffering from two types of chronic illnesses. The most common illnesses were hypertension, allergy, asthma, and various ailments of the kidney, heart, and thyroid. One respondent was mentally handicapped, and three suffered paralysis.

In Yavatmal District, India, 450 poisoning cases and 23 deaths among Bt cotton farmers were recorded during the period of July to October 2017, in what the Maharashtra state government called a "man-made disaster." Impaired vision, eye burns, loss of memory, nausea, vomiting, sweating, fasciculation (muscle twitch), respiratory distress, and shivering were common among the victims. In severe cases, respiratory paralysis occurred, resulting to death. Farmers said that the unusual height of Bt cotton plants was a factor, as the pesticide released from the sprayer is at the approximate height of the sprayer's face, resulting to inhalation.

- **Effects on women and children**

Women and children are particularly vulnerable to pesticide exposure and poisoning. The report includes information on over 600 women and 217 children in the study sites.

Women in palm oil plantations worked without adequate tools or PPE and were directly exposed to pesticides via spraying. They were casual laborers, earned below minimum wage, had no social security, and received insufficient medical attention.

Women workers experienced reproductive problems. There were some incidences of stillbirths and miscarriages. Adriana (*not her real name*), a plantation worker in the Philippines, said she had breast cysts and myoma. Her vagina itches and she finds it painful to urinate. She attributes her symptoms to pesticides, since she used to urinate on newly sprayed ground.

Women were also exposed to pesticides when washing their spouses' or relatives' pesticide-ridden clothing or PPEs, or assisting them in mixing and filling pesticide containers. Women mixed chemical fertilisers and granular pesticides with their bare hands.

Children who handled pesticides directly were reported in India, Indonesia, and Pakistan. Pakistani children worked with pesticides as part of family chores. They open bags of granular pesticides, mix pesticides with water, and assist in spraying. None of them used gloves or other protective clothing when handling HHPs—including lambda-cyhalothrin, which is especially toxic to children and included in PANAP's Terrible Twenty list.

Children were further exposed via spray drifts, through the pesticide-contaminated clothing and PPEs of their household members, pesticides stored at home, and pesticide containers that are improperly disposed of. In Pakistan, schools in the village were located very close to the fields. Children also played with empty pesticide bottles—they fill the bottles with water to splash on other children, or make a toy train out of these.

Children in floriculture plantations in Tamil Nadu, India work as flower pickers. They use their bare hands while plucking flowers and mixing pesticides, and also entered the fields immediately after the spraying of pesticides.

Various symptoms of pesticide poisoning were identified among the child laborers. These include eye irritation, nausea, stomach ache, headaches, skin allergies, excessive sweating, blurred vision, body pain, lack of appetite, tiredness, burning sensation, coughing and vomiting. "I often suffer from stomach ache and have nausea. My parents do not take me to doctor," one child labourer said. Learning and developmental problems among children were also noted.



Girls as young as 8 years old are exposed to pesticides in floriculture plantations in India where they work as flower pickers. (Photo by SRED)

Environmental Effects

Empty containers thrown or buried in open fields contaminated land and water systems. Washing bodies, pesticide equipment, PPE and containers in creeks, brooks and irrigation canals also polluted the environment.

Aerial spraying of pesticides is routine in the Philippines and is noted in Bangladesh. Pesticide drift harms nearby crops or other non-target plants, livestock and wildlife, and causes environmental contamination of the soil and water. Furthermore, some of the HHPs used are persistent and can stay in the environment for years.



Spraying equipment is often washed in canals, contaminating water systems. (Photo by PAN India)



Empty pesticide sachets disposed of in fields in Bangladesh (Photo by BARCIK)

CONCLUSION & RECOMMENDATIONS

Pesticide use and the resulting impacts on human health, life of rural communities, the sustainability of food production, biodiversity and the environment is an immense problem that does not get addressed comprehensively at an international level or adequately at a local level.

This report affirms that in the Asia Pacific region, there remains an almost total lack of responsibility and accountability by the agrochemical industry for the use of their products, as well as weak regulatory

mechanisms to ensure compliance with international agreements to ensure sound pesticide management, including the non-binding and voluntary International Code of Conduct on Pesticide Management.

A report by the Nordic Council of Ministers – Chemicals and Waste Management Beyond 2020 – has noted that aspirational goals and voluntary approaches have not achieved sound management of chemicals, including pesticides. “There is a general global consensus that the current international regulatory framework for chemicals and waste is fragmented and contains many critical lapses,” the report said.

PAN Asia Pacific agrees that in looking beyond 2020, it is important for SAICM to preserve its multi-stakeholder and multi-sectorial character, while making sure that it contains a function to add binding obligations, together with national measures for meeting those obligations. Similarly, the Nordic Council of Ministers’ report has advised that consideration needs to be given to an international legally binding framework for chemical management, with the International Conference on Chemicals Management (ICCM) hosting the framework.

Another proposal is for SAICM to continue as a largely voluntary approach but with some legally binding elements such as for HHPs, with dedicated financial resources and plans of action for implementation.

Together with PAN International, we are advocating for a global legally binding treaty on the life-cycle management of pesticides. We believe that the lack of a global treaty on the life-cycle management of hazardous pesticides leaves a critical gap in the human rights protection framework, as well as the global environmental protection framework.

The global legally binding treaty on pesticides or a SAICM protocol on HHPs should:

- (a) Be based on a human rights approach, particularly acknowledging the rights of children and the greater vulnerability of women, and including cultural, environmental and labour rights;
- (b) Be based on transparency & accountability;
- (c) Take a life-cycle approach to the management of pesticides;
- (d) Be based on the precautionary principle and substitution, considering agroecological practices and non-chemical alternatives first;
- (e) Have an emphasis on minimising harm, promoting the use of the less hazardous approaches to pest management;
- (f) Promote agroecology;
- (g) Remove existing double standards among countries that are particularly detrimental to countries with weaker regulatory systems, in that countries which ban pesticides because they are too hazardous should not export them to other countries;
- (h) Generate policies to reduce pesticide use worldwide and develop a framework for the banning and phasing-out of highly hazardous pesticides;
- (i) Place strict liability on pesticide producers for human and environmental impacts, for container return, and for unused/obsolete stocks;
- (j) Prevent the sale of pesticides that require Personal Protective Equipment (PPE) in

countries that are too hot for PPE to be comfortably worn, and/or where PPE is not readily available or affordable;

- (k) Establish systems of global monitoring of the impacts of pesticides on human health, biodiversity, & environmental contamination;
- (l) Monitor corporations to ensure that labelling, safety precautions and training standards are respected;
- (m) Adopt measureable targets, which form a strategic plan to ensure proper implementation of the treaty; and
- (n) Provide for the development of, and reporting back on, comprehensive national action plans that support alternatives to hazardous pesticides.



Empty bottles of paraquat, which is banned for use in Vietnam. Paraquat is banned in its country of manufacture, Switzerland, but is still exported—‘double standards’ that a global legally treaty on pesticides or a SAICM protocol on HHPs seeks to remove. (Photo by SRD)



**For more information, visit
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**The Strategic Approach and the sound management of
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