March 2025

About the science-policy panel on chemicals, waste and preventing pollution

Policy-relevant science to stem the pollution crisis

Pollution – including from chemicals and waste – is a global problem: deadly to humans, destructive to ecosystems and disastrous for economies. To counter these threats, the countries of the world are developing a new body that will provide cutting-edge science and policy advice on issues related to chemicals, pollution and waste.

This science-policy panel, expected to become operational in 2025, is seen as pivotal to improving the health of people and the planet, and to tackling the triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste.

Pollution is widespread and fatal

Chemicals are a US$5 trillion industry, integral to global food, health and the transportation systems, among others. If not managed properly, chemicals can have severe impacts on human health, causing acute poisoning, cancers, birth defects, neurological disorders, hormone disruption, drug-resistance infections and other grave illnesses.

Pollution is estimated to be responsible for 9 million deaths a year globally, or one in six fatalities. Over the last two decades, pollution-related deaths have increased by 66 per cent. Air pollution is one of the largest environmental threats to human health worldwide. Ninety-nine per cent of the world population is exposed to levels of air pollution that do not meet the 2021 World Health Organization (WHO) air quality guidelines.

Chemical and biological pollution increases the risk of antimicrobial resistance, which caused almost 1.3 million directly attributable deaths and nearly 5 million associated deaths in 2019. If left unchecked, this issue is projected to push 24 million people into extreme poverty in the next decade.

Waste is a leading contributor to the climate crisis, with 2.1 billion tonnes of solid waste produced annually – enough to reach the moon and back if it was packed into standard shipping containers and placed end-to-end.

The cost of poor waste disposal practices rises to US$361 billion a year when factoring in the hidden costs of pollution, poor health and climate change.

One in three children – up to approximately 800 million globally – have dangerously high blood lead levels, which has been linked to neurological damage, lower intelligence quotient scores, diminished academic achievement, attention deficits and behavioural problems. The global cost of lead exposure was US$6 trillion in 2019, equivalent to almost 7 per cent of the global gross domestic product.

Growing body of evidence supports that exposure to non-essential metals such us lead, cadmium and arsenic is a significant contributor to cardiovascular disease worldwide.

Solution to lessen the toll of chemicals, waste and pollution

The UN Environment Assembly, the world's top decision-making body on the environment, decided in 2022 to establish an independent, intergovernmental panel to help countries better manage chemicals and waste, and to prevent pollution.

The body aims to strengthen the interface between science and policymaking by providing governments and others with the information they need to implement international instruments on chemicals, waste and pollution.

The panel – expected to be operational as early as 2025 – will sit alongside existing science-policy bodies, including the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). The panel will help ensure that all three components of the triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste, have a dedicated science-policy body.

The science-policy panel will complement the work of United Nations entities and other organizations. It will also provide policy relevant, credible and scientifically robust scientific evidence to support countries in making sound decisions and to guide stakeholders towards a transformational shift to achieve sustainability.

Why science-policy bodies are important for people and the planet

Science-policy bodies review scientific information and develop advice for governments, businesses and other groups. Robust, interdisciplinary science-policy panels improve access to timely, high-quality information, identify key gaps in existing knowledge and spotlight emerging issues. These bodies conduct assessments to help identify solutions, including those relevant to developing countries, support communication between scientists and policymakers, and share their findings with various audiences.

This helps raise global awareness on the state of the environment and people's health, as well as drives the political will and resources necessary to confront critical challenges. For example, a 2018 special report from the IPCC outlined the risks of global warming, including extreme weather and rising seas, alerting the world to the pressing need to strengthen the global

response to the threat of climate change. Governments are acting because of these reports.

How the new science-policy panel is being formed

An open-ended working group hosted by UNEP is in the process of developing proposals for key aspects of the panel, including its name, scope, objective, operating principles, rules of procedure and how it will manage conflicts of interest.

Member States are in the driving seat. The working group is open to accredited observers, including representatives from the International Panel on Chemical Pollution and the Royal Society of Chemistry. A broad array of other groups, including youth, private sector and farmers, will also participate in the process.

The working group met for its first session in Nairobi, Kenya, in October 2022 and for a resumed session in Bangkok, Thailand, in January and February 2023. The sessions focused on procedural matters, including budget and resources, rules of procedure, the establishment of a bureau and the election of a chairperson. The second session took place in Nairobi, Kenya, in December 2023. Deliberations were held on the draft texts prepared by the secretariat, including on operating principles, institutional arrangements and a conflict-of-interest policy. The first part of the third session took place in Geneva, Switzerland, in June 2024, where discussions continued moving forward.

The final session will be hosted by Uruguay in Punta del Este from 14 to 18 June 2025. At the meeting, delegates are expected to finalize a foundational document and set of draft rules of procedure on how the panel will be structured and how it will operate.

These will then be taken forward to an intergovernmental meeting from 19 to 20 June 2025 led by UNEP's Executive Director, which will sign off on the panel's formal establishment.

The panel's relationship to sustainable development

The 2030 Agenda for Sustainable Development includes 17 global goals designed to be a blueprint to achieve a better and more sustainable future for all. The science-policy panel on chemicals, waste and pollution will contribute to a number of Sustainable Development Goals (SDGs), including SDG 3 (Good Health and Wellbeing); SDG 6 (Clean Water and Sanitation); SDG 12 (Responsible Consumption and Production); SDG 14 (Life Below Water); and SDG 15 (Life on Land).

The science of chemicals, pollution and waste

UNEP is the leading global authority on the environment. For decades, UNEP has produced science on the impact of chemicals, pollution and waste. Here are some of the most-recent reports:

- Global Waste Management Outlook 2024 (2024)
- Bracing for Superbugs: Strengthening environmental action in the One Health response to antimicrobial resistance (2023)
- Chemicals in Plastics - A Technical Report (2023)
- Chemicals and Waste Reports for UNEA 5 (2022)
- An Assessment Report on Issues of Concern: Chemicals and Waste Issues Posing Risks to Human Health and the Environment (2020)
- Summary Analysis of Stakeholders' Views on Priorities for Further Work and Potential Further International Action (2020)
- Chemicals and Waste Issues of Concern (2020)
- Global Chemicals Outlook II (2019)

UNEP, and others, have also explored the mechanics and importance of the science-policy interface for the sound management of chemicals and waste, and to prevent pollution:

- Assessment of options for strengthening the science-policy interface at the international level for sound management of chemicals and waste (UNEP, 2021)
- Strengthening the Science-Policy Interface in International Chemicals Governance: A Mapping and Gap Analysis (International Panel on Chemical Pollution, 2019)
- Strengthening the Science-Policy Interface: A gap analysis (UNEP, 2017)