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- Waste Management Area of the UNEP Global Mercury Partnership

GLOBAL MERCURY PARTNERSHIP

Factsheet for the non-electronic measuring devices

As of March 2025

About this product

Non-electronic measuring devices (NEMDs) are types of mercury-added products where mercury is under its elemental form (liquid). Parties to the Minamata Convention shall take measures not to allow the manufacture, import or export of the following NEMDs (except NEMDs installed in large-scale equipment or those used for high precision measurement, where no suitable mercury-free alternative is available:

a. barometers;
b. hygrometers;
c. Manometers:
d. Thermometers:
e. Sphygmomanometers.

The quantity of mercury used varies depending on types of product, as well as places where these products are used and stored.

Product	Application (example)	Hg-content (g)
Thermometers	Measuring temperature, industrial application	0.61 - 2.25
Barometers and vacuum gauges	Measuring atmospheric pressure, weather monitoring purpose and farming application	300 – 600
Flowmeters	Measuring the rate of flow in water, etc.	Up 5,000
Hydrometers	Measuring the gravity and density of a liquid, etc.	0.002 – 1
Hygrometers/ psychrometers	Measuring the moisture content in air	3 – 7
Manometers	Measuring air, water and gas pressure, etc.	100 – 500
Pyrometers	Measuring extremely hot materials,	5 – 10
Thermostat probes	Preventing gas leakages	1
Sphygmomanometer	Measuring blood pressure	20 - 60

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Classification

Based on the Annexes to the Basel Convention, wastes of NEMDs and mercury are classified under the following codes. Wastes of NEMDs are generally considered as hazardous wastes due to their mercury content and their hazardous characteristics.

Waste of NEMDs	A1030 (Annex VIII): Wastes having as constituents or contaminants any of the following • Mercury; mercury compounds
Mercury and mercury compounds	Y29 (Annex I): Mercury and mercury compounds

Hazardous characteristics of NEMDs

Basel Convention (Annex III)	Globally Harmonized System
H6.1: Poisonous (Acute) H11: Toxic (Delayed or chronic) H12: Ecotoxic	H330: Acute Toxic 2 H372: STOT RE 1 H400: Aquatic Acute 1 H410 Aquatic Chronic 1 H360D: Repr 1B

Handling and separation

In general, care should be taken when handling NEMDs as they contain liquid mercury. Waste of NEMDs should be handled separately from other wastes and in a manner that prevents any breakage or damage.

In the event of breakage, consult the United States Environmental Protection Agency website for information on what to do if a mercury thermometer breaks and follow the instructions. The website generally states,

- Wear gloves, pick up any broken pieces of glass or sharp objects, locate any visible mercury with a squeegee or cardboard, use the pipette to collect the mercury and squeeze it onto a damp paper towel, place the paper towel in a zip-lock bag, label the bags as directed by your local health or fire department, and contact the appropriate authorities to dispose of them in accordance with local laws and regulations.

On the other hand, the website states that following should NEVER be done after a mercury spill.

- Never use a vacuum cleaner to clean up mercury.
- Never use a broom to clean up mercury.
- Never pour mercury down a drain.
- Never walk around if your shoes might be contaminated with mercury.

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Collection

The modalities of collection may vary according to the types of NEMDs, the waste generators (households, hospitals, industrial facilities…) as well as other conditions (legal, economic, social). In any case, the establishment of a legal basis that requiring the separate collection of wastes of NEMDs is a crucial to ensure the environmentally sound management.

In the case of household collection, the following options can be consulted. **Note that the following collection methods can be applied to wastes of all mercury-added products discarded from households.** The collection rate will be further improved if take-back collection programs (substitution by digital devices) are in place.

Station collection	**Wastes of NEMDs are separated and discarded by residents at the existing waste station on the day of recyclable waste collection.** • Highly convenient for residents, allowing collection close to their homes. • Cost-effective if they can be collected at the same time as other wastes. • Handling at the point of discard largely depends on the awareness of the residents.
Hub collection	**Residents bring wastes of NEMDs to collection points set up by the relevant authorities.** Authorities can set up collection points at advertised locations (e.g., electronics shops, pharmacies or public places) on pre-determined dates. • Effective publicity is essential for successful collection. • Strategic placement of collection points within the community is necessary.
Collection at house	**Licensed collectors go directly to residents' homes to collect wastes of NEMDs.** • Wastes can be safely collected but this can be resource intensive.
Collection programs	**Licensed NGOs or others implement the relevant collection programs.** • This is more likely to be collection campaigns with education/training than recurrent collection. In developing countries, waste pickers may be involved in this type of initiative.

Station collection

Collection hub (store)

Photo: Guidelines for the segregation and collection of wastes of mercury-added products discarded from households (Japanese)

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Packaging, Labelling and Transport

It is recommended that the UN Recommendations on the Transport of Dangerous Goods are followed for packaging, labelling and transport of NEMDs. They are most likely to fall under the classification UN3506 (Mercury contained in manufactured articles).

Labelling	Class 8 Hazard: Corrosive substances Class 6.1 Hazard: Toxic substances  
Packaging	Packing instructions: P003 Special packing provisions: PP09 Mixed packing provisions: MP15

P003: the use of suitable outer packaging, constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, but not necessarily conform to a design type successfully tested.

PP90: the use of sealed inner liners or bags of strong leakproof and puncture resistant material impervious to mercury which will prevent escape of the substance from the package irrespective of the position or the orientation of the package shall be used. For air transport additional requirements may apply.

For transport, each NEMD should be placed in a container appropriate to its shape, size and materials. NEMDs separated during discard should be transported individually, without mixing them with other types of waste.

Storage

The appropriate practices for the storage of wastes of NEMDs may vary depending on the location and situation. Compliance with the siting requirements of the relevant regulatory authority is critical. In addition, the following general considerations should be made.

Facility	• Locate storage facilities in areas less prone to natural disasters • Provide signage at storage facilities • Minimize the risk of robbery by storing in lockable locations. Should be secured and accessible only to authorized personnel. • should be easily accessible for fire fighting and other emergency procedures. • Drains should be closable in the event of an emergency. • All equipment and containers should be accessible for inspection and secured against unauthorized entry.
Container	• Use appropriate containers to prevent the damage and spillage.
Storage	• Should be stored indoors or outdoors in sealed containers. • Store wastes of NEMDs separately from other wastes • Should be stored in such a manner that prevents contact from incompatible wastes.

Treatment and final disposal

See the technical guidelines for the ESM of mercury waste under the Basel Convention as this practice is generally common to all types of mercury waste.