Submission of information related to mercury waste thresholds

Government of Japan

Japan appreciates the work of the group of technical experts on mercury waste thresholds and the support from the Secretariat of the Minamata Convention. In response to the call for information from the Executive Secretary of the Convention on 28 October 2022 (MC/ES/2022/178), Japan would like to herein submit relevant information as requested by the group of technical experts.

i. Information on approaches other than a total mercury concentration approach, including risk-based considerations

As submitted before, Japan categorizes industrial wastes contaminated with mercury or mercury compounds as either "*Specially-controlled industrial wastes*", "*Dust and others contaminated with mercury*" or other industrial wastes under the Waste Management and Public Cleansing Act. Necessary measures to ensure environmentally sound management vary by category. In general, Japan uses a release potential to define hazardous wastes and a concentration approach to determine whether wastes that are not hazardous fall under wastes contaminated with mercury or mercury compounds.

Specially-controlled industrial wastes are the following wastes generated at designated facilities relevant to specific types of the waste stream:

- slag, soot and dust, sludge, treated substances or objects thereof and treated waste acid and waste alkali that leach more than 0.005 mg-Hg/L; or
- waste acid and waste alkali which contain more than 0.05 mg-Hg/L.

Dust and others contaminated with mercury or mercury compounds are slag, soot and dust, sludge, waste acid and waste alkali that do not fall under "*Specially-controlled industrial wastes*" but contain more than **15 ppm** of mercury.

The remaining wastes contaminated with mercury or mercury compounds are categorized as industrial wastes in general.

Japan is of the view that a total concentration approach is the most appropriate way to identify wastes contaminated with mercury or mercury compounds subject to Article 11 of the Convention. In particular, we support the advantages of the total concentration approach highlighted in the report of the group of technical experts on mercury thresholds (UNEP/MC/COP4.8), including:

- Wastes contaminated with mercury were managed in a large variety of ways, and not only disposed of on land. Leach testing procedures focused on evaluating mercury release to groundwater from land disposal (and therefore the exposure pathway of mercury is limited to water intake).
- There are internationally accepted protocols for measuring the level of mercury present in a waste sample based on total concentration. There is no comparable globally accepted leaching procedure for wastes contaminated with mercury or mercury compounds potentially managed under diverse conditions.

We also note that the intrinsic hazard property of mercury in wastes is inherent regardless of exposure pathways or conditions specific to countries.

We understand that the objective of the Convention is to protect human health and the environment. However, establishing a uniform threshold with a risk-based approach at the global level is not realistic since the exposure pathway varies by local conditions. In particular, we believe that:

- thresholds to determine whether or not wastes in question exhibit risk may vary by type of waste, consequently prevailing disposal practices in the country and associated exposure pathways; and
- setting a uniform threshold at the global level at the safest side (e.g., based on a risk of direct contact with the waste open-dumped near a residential area) would impose an unnecessary burden on some Parties where such a risk scenario would never happen (See the COP4 decision, *"consider the situation of parties that already manage mercury waste in an environmentally sound manner"*).

As a result of taking a risk-based approach, it could be concluded that both a total mercury concentration approach (relevant to direct intake) and a release potential approach (relevant to drinking water) be applicable for thresholds of wastes contaminated with mercury or mercury compounds according to exposure pathways. However, establishing a threshold with a release potential is challenging since its test method significantly influences a leaching level while there are no common leaching procedures accepted at the global level as highlighted by the group of technical experts.

ii. For which types of waste, or for all waste, the above-mentioned approach should be considered. Referring to the indicative list of type C waste

If the group of experts wishes to explore a risk-based approach, exposure pathways and associated disposal operations should be considered in tandem since the exposure pathway is largely dependent on actual disposal operations. The exposure pathway and associated disposal operation could potentially be categorized as follows (Note that the disposal operation in the table may not be exhaustive). However, the practice on the ground may be different depending on the specific circumstances of the country, which needs to be taken into account.

Exposure pathway	Disposal operation (e.g.)
Soil intake or contact with soil	Deposit into or onto land (e.g., open-dumping, soil application as fertilizers)
Inhalation through the air	Thermal treatment (e.g., mercury recovery at high-end facilities)
Water intake	• Deposit into or onto land • Landfilling • Recycling/reclamation of other inorganic materials

Below is the indicative list of wastes contaminated with mercury or mercury compounds as set out in MC-3/5 and its corresponding (and potential) exposure pathway based on representative disposal operations in Japan. Note that the exposure pathway may not capture the nationwide situation correctly in Japan and also vary by country (e.g., there are no open-dumping sites in Japan).

Type of waste	Exposure pathway			Disposal operation
	Soil	Air	Water	
Waste from industrial pollution control devices or cleaning of industrial off-gases		✓	✓	Thermal treatment, recycling, direct landfilling or landfilling after treatment
Bottom ash			✓	Recycling or landfilling
Wastewater treatment residues/slurries	✓	✓	✓	Soil application, thermal treatment, direct landfilling or landfilling after treatment
Sludge	✓	✓	✓	Soil application, thermal treatment, direct landfilling or landfilling after treatment
Oil and gas refining catalyst		✓	✓	Thermal treatment or landfilling after treatment

Type of waste	Exposure pathway			Disposal operation
	Soil	Air	Water	
Tailings and extraction process residues			✓	Direct landfilling or landfilling after treatment
Rubble, debris and soil		✓	✓	Recycling, thermal treatment
Other wastes from the manufacturing of mercury-added products		✓		Thermal treatment
Other waste from natural gas cleaning		✓	✓	Thermal treatment, direct landfilling or landfilling after treatment
Waste from waste treatment facilities		✓	✓	Thermal treatment, direct landfilling of landfilling after treatment

The table generally indicates that exposure pathways are different by waste type and corresponding disposal operation. One of the challenges in establishing thresholds with a risk-based approach is difficulties in identifying relevant exposure pathways at the time of waste in question being generated since there could be multiple disposal operations available at the subsequent management phases. We also believe that considering thresholds based on disposal operations and exposure pathways where wastes are not managed in an environmentally sound manner (e.g., open-dumping in developing countries) would result in imposing unnecessarily strict requirements for other Parties where such disposal operations and exposure pathways do not exist at the national level. Scenarios of exposure pathways significantly vary by country.
The threshold under the Convention should be regarded as a minimum requirement that Parties shall comply with, but flexible enough to accommodate all Parties' waste management practices and capacities without imposing an unnecessary burden on Parties.

iii. Any consideration for establishing thresholds based on the above-mentioned approach, which may include applicable releases and exposure scenarios and specific threshold values to be considered.

Again, Japan is of the view that a total concentration threshold is the most appropriate way to identify waste contaminated with mercury or mercury compounds; a hazard-based approach is the most useful one to come up with a specific threshold at the global level, and a threshold with a risk-based approach is not realistic.

If Parties cannot agree to a uniform total mercury content as a threshold and wish to explore a threshold with a risk-based approach, we believe that each Party should have flexibilities to set their thresholds to ensure the environmentally sound management of wastes contaminated with mercury or mercury compounds depending on their typical waste streams, disposal operations and associated exposure pathways, taking into account challenges described in I and

II above. However, this would result in not being able to establish uniform “thresholds defined by the Conference of the Parties” required by the Convention. In this context, Japan believes that the total mercury concentration is the most suitable, otherwise, novel approaches should be sought such as re-considering an interpretation of thresholds.