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Item 6 (h) of the provisional agenda*

Matters stipulated by the Convention for action by the Conference of the Parties: the definition of mercury waste thresholds referred to in paragraph 2 of article 11

Informal process on the establishment of mercury waste thresholds led by the Government of Japan

Note by the secretariat

As its seventh session, the intergovernmental negotiating committee to prepare a global legally binding instrument on mercury recommended that informal efforts to propose appropriate mercury waste thresholds be pursued by those with the relevant expertise (see UNEP(DTIE)/Hg/INC.7/22/Rev.1, para 210). Subsequently the Government of Japan facilitated discussions on such thresholds in the context of the Minamata Convention on Mercury under the aegis of the United Nations Environment Programme's Global Mercury Partnership, including the Partnership's Mercury Reduction in Products Area and Mercury Supply and Storage Area. The draft paper developed as a result of those discussions was presented by the Government of Japan at Minamata Convention working sessions held in March 2017, and the participating countries, international organizations and non-governmental organizations, as well as members of the participating areas of the UNEP Global Mercury Partnership, were asked to comment on it. A revised draft of the paper, incorporating the comments received, is annexed to the present note for the information of the Conference of the Parties to the Minamata Convention at its first meeting. It is presented as received, without formal editing.

* UNEP/MC/COP.1/1.

Annex

Recommendations on proceeding discussions on thresholds for identification of mercury wastes under the Minamata Convention

1. Background

(1) Definition of wastes under the Minamata and Basel Conventions

Article 11 of the Minamata Convention on Mercury (hereinafter referred as “the Minamata Convention”) provides that the relevant definitions of the Basel Convention shall be applied or used as guidance to wastes covered under the Minamata Convention. Article 2 of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (hereinafter referred as “the Basel Convention”) defines wastes as “substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law”.

(2) Definition of mercury wastes under the Minamata Convention

Article 11 of the Minamata Convention defines mercury wastes as “substances or objects:

- (a) Consisting of mercury or mercury compounds;
- (b) Containing mercury or mercury compounds; or
- (c) 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, that are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law or this Convention”.

Article 11 of the Minamata Convention also prescribes that “each Party shall take appropriate measures” so that mercury waste is:

(a) Managed in an environmentally sound manner, taking into account the guidelines developed under the Basel Convention (hereinafter referred as “Basel Guidelines” or “BG”) and in accordance with requirements that the Conference of the Parties shall adopt in an additional annex in accordance with Article 27 (hereinafter referred as “the management requirements”). In developing requirements, the Conference of the Parties shall take into account Parties’ waste management regulations and programmes;

(b) Only recovered, recycled, reclaimed or directly re-used for a use allowed to a Party under this Convention or for environmentally sound disposal pursuant to paragraph (a);

(c) For Parties to the Basel Convention, not transported across international boundaries except for the purpose of environmentally sound disposal in conformity with Article 11 of the Minamata Convention and with the Basel Convention. In circumstances where the Basel Convention does not apply to transport across international boundaries, a Party shall allow such transport only after taking into account relevant international rules, standards, and guidelines.

(3) International discussions

Countries were requested to provide the interim secretariat of the Minamata Convention with information on national use of thresholds for identifying mercury waste and regulations at the sixth session of the International Negotiating Committee on mercury (INC6) held in November, 2014. The interim secretariat of Minamata Convention undertook inter-sessional work and compiled the submissions and presented the report to INC7 held in March 2016. Since the information provided before INC7 was insufficient, countries were requested at INC7 to provide additional information so that informal discussions in relation to such thresholds can occur among the countries prior to the first Conference of the Parties (COP1). The report of INC7 reads:

210. Following its discussion, the committee decided that the secretariat should collect additional information on the use of mercury waste thresholds from Governments and others and that informal efforts to propose appropriate thresholds should be pursued by those with the relevant expertise.

Interim secretariat called for additional information to governments and others and 6 countries and EU responded and submitted the information on Article 11.

2. Process

(1) Forming an informal discussion group

After INC7, UNEP requested Japan, as the lead country of the Mercury Waste Management Area under the UNEP Global Mercury Partnership, to take the lead in informal discussions with respect to thresholds for identifying mercury wastes. Therefore, Japan proposed to facilitate discussions on such thresholds under the Minamata Convention within the UNEP Global Mercury Partnership in cooperation with the Mercury Reduction in Products Area, and the Mercury Supply and Storage Area.

(2) Preparatory works

The partnership leads and other volunteer experts exchanged views and ideas on the process and discussion points of the mercury waste thresholds. The initial discussion paper was prepared by Japan, which was circulated among partners of the three partnership areas under the UNEP global mercury partnership. It was also introduced at the UNEP-IETC workshop on global mercury waste assessment held in Thailand in November 2016. After reviewing the comments received by mid-January 2017, the previous draft of this paper was prepared for recommending COP1 to take further actions.

(3) Informal consultation

The earlier draft of this paper was presented at the Minamata Working Sessions held in conjunction with the regional preparatory meetings for the BRS 2017 COP, and the participating countries, international organizations, and NGOs as well as members of the three areas of the UNEP Global Mercury Partnership were asked to provide comments on the earlier draft by the end of April 2017.

By the end of April 2017, nine stakeholders provided comments. Based on those comments, the earlier draft was revised.

3. Proposed further actions

(1) Establishment of an ad hoc intersessional working group

As the Minamata Convention will enter into force on 16 August 2017 (the COP1 of the Minamata Convention is scheduled during the last week of September 2017), formal discussion on thresholds for identification of mercury wastes under the Minamata Convention should be started as soon as possible. The issue is highly technical in some parts [and also involves many administrative implications]. A possible way to proceed the formal discussion would be to establish an ad hoc intersessional working group (between COPs) to discuss and develop recommendations on the mercury waste thresholds to the subsequent COPs.

(2) Structure of the intersessional working group

The group will be composed of 19 members nominated by each of the five UN regions. The distribution of the seat allocation is suggested as follows:

African States: 3

Asia-Pacific States: 5

Central and Eastern European States: 2

Latin American and Caribbean States: 3

Western European and other States: 6

The group will elect two co-chairs and [may] invite[, as appropriate,] the participation of [four] experts from industry and civil society [two from industry and two from civil society] as observers. The group will widely invite inputs to their documents from other governments, intergovernmental organizations, industry and civil society organizations.

[The expert group should work as much as possible using electronic means that reduce the need for costly face-to-face meetings.]

(3) TOR for the intersessional working group

Possible TOR for the intersessional working group may include, but not limited to, the following:

1. Elect two co-chairs to facilitate the discussion;
2. [Decide arrangements in the intersessional period];
3. Discuss basic principles to apply setting mercury waste thresholds;
4. [Examine [whether and]what types of thresholds are appropriate [and whether such thresholds are useful] for [each of the three mercury waste types [(e.g. a specific total content of mercury or mercury compounds, a list of mercury-added products, and a specific mercury concentration in eluate)]]mercury wastes];][Consider whether the different waste types identified by the Convention warrant different threshold values;]
5. Collect and scrutinize scientific information necessary for setting mercury waste thresholds as well as test methods to determine the thresholds[, as determined by the basic principles in 3 above][and assess policy implications for the Convention of the potential threshold approaches];
6. Discuss appropriate mercury wastes thresholds[, if any] and test methods to determine the thresholds (if there are more than one test method proposed for one threshold, identify ways to compare different values determined by different methods);
7. [Examine potential implications of setting such thresholds in terms of achieving the objective of the Convention, implementing relevant Articles of the Convention, and controlling wastes];
8. [Closely collaborate with relevant groups under the Basel Convention for the discussions on items 3 through 7 above;] and
9. Report the results of discussion to the Conference of the Parties.

Some guiding questions at the intersessional working group are attached as “Thought starter” to this document.

(3) Draft decision at the COP1

To establish an intersessional working group on mercury waste thresholds, the COP may wish to adopt the following decision:

Decision on arrangements in the intersessional period

Considering that effective and efficient arrangements are required in order to implement expeditiously the Convention to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds;

[Mindful of the relationship between the thresholds and the requirements that the Conference of the Parties shall adopt in an additional annex to the Convention;]

Taking into account the experiences gained through, inter alia, the UNEP Global Mercury Partnership[and the experiences of Parties and others in managing mercury waste];

The COP:

1. Establishes an ad hoc intersessional group of technical experts, as a subsidiary body which will report to the Conference of the Parties, to develop [recommendation for]the threshold[s] for identification of mercury wastes called for in Article 11 of the Convention, to enable the Conference of the Parties to decide on such issues at its [second][third] meeting,
2. Requests the secretariat to convene the group of technical experts at the earliest opportunity with following structure and arrangements:
 - a) The group, which at its first meeting shall elect two co-chairs, shall comprise experts in mercury waste management, nominated by the five United Nations regions;
 - b) 19 members, three from African States, five from Asia-Pacific States, two from Central and Eastern European States, three from Latin American and Caribbean States and six from Western European and other States shall be nominated by the respective regional groups;
 - c) The group [may][will] invite, as appropriate, the participation of [[a few] experts from industry and civil society as observers][four observers, two from industry and two from environmental organizations].
 - d) The group shall invite input to the documents, prepared by the ad hoc intersessional technical working group, from other governments, intergovernmental organizations, industry and civil society organizations to assist it in completing its work.

Appendix I

Attachment

Thought Starter for Discussion on Thresholds for Identification of Mercury Wastes under the Minamata Convention

1. Basic principles

[[Although INC7 did not require the participating countries to discuss management requirements to be adopted in an additional annex of the Minamata Convention prior to COP1,] [w][We should note that][T][t]he wastes which fall below the thresholds will not be mandated to comply with the management requirements under the Minamata Convention while m][M]ercury wastes exceeding the thresholds will be subject to the existing Basel Convention ESM Technical Guidelines, and management requirements, when they are established. [Therefore, our discussions on the thresholds should proceed while imaging possible management requirements (see Annex). Since management requirements are intended to control releases from mercury wastes, threshold values must also consider the potential for release of mercury from waste that is not properly managed[, and policy implications of establishing jurisdictional thresholds].]

The thresholds to be established should consider those already adopted by each country or region, which take into account their domestic circumstances and should be at a feasible level so that all Parties could agree upon them. In addition, the thresholds should be considered in conformity with the available scientific knowledge on the grounds that they should be in principle determined from a scientific standpoint.

The mercury wastes are classified into 3 types, i.e. consisting of, containing and contaminated with mercury or mercury compounds. [The need for establishing thresholds should be assessed for each of the three waste types.] The nature and characteristics of these 3 types of mercury wastes may be different, therefore, different identification thresholds could be considered. But at the same time the thresholds should be simple enough for implementation by practitioners who undertake day-to-day waste management operations. The possibility of [no thresholds or] thresholds that do not require unnecessary quantitative analysis should also be explored as much as possible.

<Points of discussion>

- | |
|--|
| <ul style="list-style-type: none"> • What should be considered as basic principles? |
|--|

2. Relevant information

(1) Thresholds already adopted by countries and regions

Table 1 shows the thresholds for identification of hazardous wastes or mercury wastes already adopted in each country or region that were submitted to the interim secretariat of the Minamata Convention prior to INC7.

[No country or region has prescribed the thresholds (purity) for “wastes consisting of mercury or mercury compounds”, but s][S]ome countries (such as EU and U.S.A.) categorically list surplus mercury [for this type of][as hazardous] waste [instead of employing specific thresholds]. [In addition, n][N]o country or region has prescribed the quantitative thresholds only for “waste mercury-added products”, whilst some countries apply uniform thresholds regardless of waste type and one country prescribes them by product.

Countries have prescribed thresholds based either on total (mercury) content (hereinafter referred as “content threshold”) or (mercury) concentration of leaching extracts (hereinafter referred as “leaching threshold”), or both. The highest content threshold among those submitted is 1,000 Hg-mg/kg, and that among leaching threshold is 0.2 Hg-mg/L. No country has prescribed thresholds with regard to volatile release.

However, it should be noted that the values in Table 1 cannot be directly compared, as the method of measurement of mercury concentration and regulations on the management of mercury wastes above these thresholds are different among countries and regions.

Table 1

The thresholds for identification of mercury wastes by country and region

<i>Country/ Organization</i>	<i>Total content threshold</i>	<i>Leaching threshold</i>	<i>Others</i>
Japan	15 Hg-mg/kg (Threshold to determine whether they are recognized as mercury wastes or not in Japan) 0.05 Hg-mg/L for liquid wastes (Threshold to determine whether they are hazardous wastes)	0.005 Hg-mg/L (Threshold to determine whether they are hazardous wastes and can be landfilled or not)	Another threshold (e.g. 0.1 % of mercury content) exist, which is a common threshold for wastes that are subject to trade restrictions under the Basel Convention and for recyclable materials containing mercury. Specific mercury-added products are designated as industrial wastes of mercury-added products which require specific handling/treatment. The U.S. hazardous waste regulations also categorically classify surplus elemental mercury being discarded as hazardous waste.
US		0.2 Hg-mg/L (Threshold to determine whether they are hazardous wastes or not) 0.025 Hg-mg/L (Threshold to determine whether they can be landfilled or not)	
EU	17 Hg-mg/kg (dry) (Threshold to determine non-hazardous sediments by the Spanish Inter-ministry Commission for Marine Strategies)	0.2 Hg-mg/kg (L/S = 10 l/kg) (Threshold to determine whether they can be accepted in landfills for inert or non-hazardous waste) 2 Hg-mg/kg (L/S = 10 l/kg) (Threshold to determine whether they can be accepted in landfills for hazardous waste)	
Brazil		0.1 Hg-mg/L (Target of this threshold is unavailable) 0.001 Hg-mg/L (Threshold to determine whether they are inert or not)	There are no thresholds to determine whether mercury wastes are hazardous or not, as all mercury wastes are classified as hazardous wastes.
China	0.1 % for mercury iodide, mercury thiocyanate, mercuric chloride, mercuric cyanide, and mercury bromide (All substances subject to the threshold are prescribed in the National Hazardous Wastes List)	Methylmercury: 0.01 Hg-µg/L Ethyl mercury: 0.02 Hg-µg/L Total mercury: 0.1 Hg-mg/L Threshold for landfill disposal is 0.05 Hg-mg/L (All substances subject to the threshold are prescribed in the National Hazardous Wastes List)	
Norway	0.1 % (Threshold to determine whether they are hazardous wastes or not)	None	
Mexico	None	0.2 Hg-mg /L (Threshold to determine whether they are hazardous wastes or not)	

<i>Country/ Organization</i>	<i>Total content threshold</i>	<i>Leaching threshold</i>	<i>Others</i>
Switzerland	0.01 Hg-mg/L (for liquid wastes) 5 Hg-mg/kg (for wastes other than liquid wastes) (Thresholds to determine whether they are hazardous wastes or not)		
Korea		0.005 Hg-mg/L (Threshold to determine whether they are hazardous wastes or not)	Disposed mercury-added products are recycled after mercury is recovered and the residuals are disposed in waste landfill if the mercury content is less than 0.005 mg/L by the leaching test.
Thailand	20 Hg-mg/kg (Threshold to determine whether they are hazardous wastes or not)	0.2 Hg-mg/l (Threshold to determine whether they are hazardous wastes or not)	

Table 2

Wastes containing mercury in EU's list of wastes

<i>Category</i>	<i>Sub-category</i>	<i>Waste type</i>	<i>Remark¹</i>
05 WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	05 07 Wastes from natural gas purification and transportation	05 07 01 Wastes containing mercury	(c)
06 WASTES FROM INORGANIC CHEMICAL PROCESSES	06 04 Metal-containing wastes other than those mentioned in wastes from the MFSU ² of salts and their solutions and metallic oxides	06 04 04 Wastes containing mercury	(c)
	06 07 Wastes from the MFSU of halogens and halogen chemical processes	06 07 03 Barium sulphate sludge containing mercury	(c)
10 WASTES FROM THERMAL PROCESSES	10 14 Waste from crematoria	10 14 01 Waste from gas cleaning containing mercury	(c)
16 WASTES NOT OTHERWISE SPECIFIED IN THE LIST	16 01 End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance	16 01 08 Components containing mercury	(b)
	16 03 Off-specification batches and unused products	16 03 07 Metallic mercury	(a)
	16 06 Batteries and accumulators	16 06 03 Mercury-containing batteries	(b)

¹ Waste types under the Minamata Convention: (a) wastes consisting of mercury or mercury compounds, (b) wastes containing mercury or mercury compounds, (c) wastes contaminated with mercury or mercury compounds

² MFSU: manufacture, formulation, supply and use

<i>Category</i>	<i>Sub-category</i>	<i>Waste type</i>	<i>Remark¹</i>
17 CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	17 09 Other construction and demolition wastes	17 09 01 Construction and demolition wastes containing mercury	(c)
19 WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	19 03 Stabilised/solidified wastes	19 03 08 Partly stabilised mercury	(b)
20 MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	20 01 Separately collected fractions	20 01 21 Fluorescent tubes and other mercury-containing waste	(b)

Table 3

List of industrial wastes of mercury-added products in Japan

A. Existing mercury-added products in the market currently or in the past and listed in the right columns	Mercury battery	Glass thermometer	Reference electrode
	Zinc-air battery	Mercury-filled pressure thermometer*	Grip dynamometer
	Switch/relay (limited to those in which mercury use can be visually confirmed)*	Mercury clinical thermometer	Pharmaceutical products
	Fluorescent lamp (including cold cathode fluorescent lamp (CCFL) and external electrode fluorescent lamp (EEFL))*	Mercury sphygmomanometer	Formulation of mercury
	High-intensity discharge (HID) lamp*	Temperature fixed-point cell	Formulation of mercury (I) chloride
	Discharge lamp (excluding fluorescent lamps and HID lamps)*	Pigment*	Formulation of mercury (II) chloride
	Agricultural chemicals	Boiler (limited to those used in a two phase fluid cycle)	Formulation of mercury (II) iodide
	Barometer	Rotating lens assembly of a lighthouse	Formulation of mercury (I) nitrate
	Hygrometer	Mercury trim/heel adjustment device	Formulation of mercury (II) nitrate
	Liquid manometer	Mercury-based prototype for resistance	Formulation of mercury (II) thiocyanate
	Elastic manometer (limited to diaphragm type)*	Differential pressure flowmeter	Formulation of phenylmercury (II) acetate
	Pressure transmitter (limited to diaphragm type)*	Inclinometer	
	Vacuum gauge*	Frequency standard*	
B. Products using the mercury-added products listed under A as material or component (excluding those with “*” ³)			
C. Products indicating that it contains mercury or mercury compounds			

³ As for the pigment, this exemption is applicable only to those applied the pigment (e.g. paper with seal using the pigment and objects colored with the pigment).

(2) Reference values⁴

Considering that the objective of the Minamata Convention is “to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds”, the thresholds should be set to a level so that mercury in wastes does not impair human health and the environment even if it is emitted into the atmosphere or released into the land or water.

[As a reference for a leaching threshold, the guidelines published by WHO⁵ suggest the guideline value 0.006 Hg-mg/L for inorganic mercury in drinking water. This value was calculated assuming that the mercury ingestion via drinking water accounts for 10 % of the total ingestion (ingestion via food and atmosphere accounts for the rest) and for an adult whose body weight is 60 kg and drinks 2 L of water per day for mercury of which TDI is 2Hg-µg/kg/day. Needless to say, as leachate from wastes would not be directly ingested, 0.006 Hg-mg/L cannot simply be adopted as threshold. However, this value can serve as a reference when considering a leaching threshold for identification of mercury wastes.

Other references for a leaching threshold include USEPA Regional Screening Levels (RSLs), which are chemical-specific concentrations for individual contaminants in air, drinking water and soil that may warrant further investigation or site cleanup⁶, but which are not clean-up target levels. Mercury’s RSL for tap water is 0.63 µg/L.] The U.S. EPA uses 0.2 mg/L as its leaching threshold for classifying mercury waste as hazardous.

As a reference for a total content threshold, USEPA RSL for residential soil is 11 Hg-mg/kg. Other references include UK Environment Agency’s soil contamination intervention level for residential land of 1 ppm.

List of reference values

Organization	[Relevant to leaching threshold]	Relevant to total content threshold
WHO	[Drinking water standard: 0.006 Hg-mg/L (= 6 Hg-µg/L)]	-
EU		Soil concentration limit value: 1-1,5 mg/kg of dry matter. Limit value of concentration in sludge intended for use in agriculture: 16-25 mg/kg of dry matter Limit to the mercury content in the containers (finished glass, except in lead crystal): $\Sigma(\text{Pb, Cd, Hg, Cr(VI)}) < 100\text{ppm}$

⁴ Since excavated soil removed from mercury-contaminated sites may be treated as mercury wastes, the thresholds for identification of mercury wastes may take this into consideration.

⁵ WHO (2011). Guidelines for Drinking-water Quality FOURTH EDITION, http://apps.who.int/iris/bitstream/10665/44584/1/9789241548151_eng.pdf

⁶ <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide-may-2016>

Organization	[Relevant to leaching threshold]	Relevant to total content threshold
USEPA	[Drinking water standard: 2.0 µg/L][RSL for tap water: 0.63 Hg-µg/L]	RSL for residential soil: 11 Hg-mg/kg
UK Environment	-	soil contamination intervention level for residential land: 1 ppm (= 1 Hg-mg/kg)
Spain		Maximum concentration limit of sludge used as fertilizer (mg/kg of Hg of dry matter): 0,4 (class A), 1,5 (class B), 2,5 (class C)*

* Class A: Fertilizer product whose heavy metal content does not exceed any of the values in column A. Class B: Fertilizer product whose heavy metal content does not exceed any of the values in column B. Class C: Fertilizer product whose heavy metal content does not exceed any of the values in column C

(3) Test methods

Since there are several existing test methods for leaching thresholds and total content thresholds, it is necessary to understand what characteristics these methods have and how these methods are different. [In addition, if we adopt different types of thresholds for the same type of mercury wastes, we need to assess the equivalency of different leaching tests and relate leach values to total concentration.]

(4) Exposure pathway

Identifying critical pathways of mercury or mercury compounds in mercury wastes to human exposure (groundwater intake, inhalation, dermal exposure, and the atmospheric emissions) and information about methylation mechanism in landfills would be useful for discussing appropriate thresholds.

<Points of discussion>

- What information should be collected to discuss mercury waste thresholds?

3. Deciding internationally acceptable thresholds

[The wastes which fall below the thresholds will not be mandated to comply with the management requirements under the Minamata Convention.] Considering the thresholds currently adopted by each country and region, conformity with scientific knowledge, and the existing Basel Convention ESM Technical Guidelines, the thresholds shall be discussed and decided among Parties so that it would be established at a level that Parties would be able to agree on.

[Thresholds should be adopted earlier even as provisional values in order to ensure environmentally sound management on mercury wastes with concrete policy, which is better than having no thresholds for a long time.]

[The wastes which fall below the thresholds will not be mandated to comply with the management requirements under the Minamata Convention.] [However, as Article 4-2(c) of General Obligations of the Basel Convention stipulates that steps to minimize the consequences for human health and the environment should be ensured, it is important to keep in mind that the environmentally sound management of such wastes according to the concentration level is necessary.]

<Points of discussion>

1. As some characteristics of “wastes consisting of mercury or mercury compounds”, “wastes containing mercury or mercury compounds”, and “wastes contaminated with mercury or mercury compounds” are different, should different thresholds be considered for each waste type? Alternately, should [one threshold be used for all types of mercury wastes][the same thresholds be used for both “wastes containing mercury or mercury compounds” and “wastes contaminated with mercury or mercury compounds”]?
2. “Wastes consisting of mercury or mercury compounds” consist of simply mercury or mercury compounds [as (relatively) pure chemical compounds]. [As there are the items to consider in the Basel Guidelines in relation to “wastes consisting of mercury or mercury compounds”, should the thresholds for these wastes be established based on their purity? Article 3 of the Minamata Convention stipulates that “mercury” include mixtures of mercury with other substances with a mercury concentration of at least 95 % by weight. If such purity of mercury is considered as “mercury” in the Minamata Convention, could its waste be considered as “wastes consisting of mercury or mercury compounds”? Should this definition be adopted for use in Article 11, in setting thresholds for “wastes consisting of mercury or mercury compounds”? Should wastes below this purity be categorized as “wastes contaminated with mercury or mercury compounds”?] Alternatively, is it better [not to establish thresholds or] to specify or list up “wastes consisting of mercury or mercury compounds”?
3. [With regard to “wastes contaminated with mercury or mercury compounds”, although the thresholds can be either leaching threshold or total content threshold, since the type of threshold adopted by each country and region is different, should both types be adopted at the international level so that each Party can select a type in accordance with their domestic regulations? If so, how are we going to assess the equivalency of different leaching tests and relate leach values to total concentration? As for the concrete threshold values, should the thresholds be at a level agreeable among Parties taking into consideration their analysis capacities and in the range of current thresholds adopted among countries and regions, namely between 5 and 1,000 Hg-mg/kg with regard to content threshold and between 0.005 and 0.2 Hg-mg/L with regard to leaching threshold?]
4. As there are various types of “waste mercury-added products” among wastes containing mercury or mercury compounds, establishing a uniform method to assess and regulate the mercury content or mercury in leaching extracts for these wastes is difficult. Moreover, because mercury is clearly used in some devices, conducting measurements for identifying mercury content or concentration in mercury-added products may impose an unnecessary testing burden for waste generators and treaters. Therefore, establishing a [n indicative] list of target mercury-added products subject to the management requirements could be one option. If so, how are we going to develop a list? [What are the advantages and disadvantages of establishing thresholds for mercury-added products? Are they needed, and for what purpose?]
5. As each country and region has adopted different methods to measure the concentration of mercury, should the method already adopted by each Party be accepted at the international level? As this is basically a technical matter, we may want to review and identify a list of technically acceptable analytic methods.
6. Based on EPA assessments, methyl mercury is three times as toxic as inorganic mercury. Considering that Minamata Disease was caused by organic mercury in wastewater, with regard to leaching thresholds, is it preferable to confirm that “organic mercury is not detected” in leaching extracts apart from total mercury? However, it should be noted that some countries may not have enough capacities and technologies to analyze organic mercury.

Annex: Major management items in the Basel Guidelines

The Basel Guidelines that each Party shall take into account should be useful information. The updated Basel Guidelines was adopted at the 12th meeting of the Conference of the Parties to the Basel Convention (COP12) held in May 2015. Major management items are summarized in the following table.

Table
Major management items in the Basel Guidelines

<i>Management item</i>	<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>		
	<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>
Waste generators and treaters recognize that wastes which they are handling are mercury wastes.			Inform end-users of how to handle mercury-added products safely (BG128)
			Request manufactures and distributors to provide consumers with information on mercury-added products (label on the products, packages, Webpages, etc.) (BG134, 135, 136, 137)
			Raise consumer awareness by using the same color or by displaying the same logo for designated waste containers at waste collection stations (BG142)
	Mark the storage areas for mercury wastes clearly with warning signs (BG158)		
	Properly package and label “mercury wastes” when transporting mercury wastes (BG150)		
			Require importers, exporters, manufacturers or relevant agencies in charge of product labeling to display with locally appropriate and/or relevant local language(s) so that consumers, users, and other stakeholders in those countries will be able to understand the contents when mercury-added products are exported and become wastes in the importing countries (BG137)
Waste generators and treaters recognize that wastes which they are handling are mercury wastes.	Display on containers for mercury wastes a mark indicating that they are “toxic” (BG127)		
Each Party identifies the situation of mercury waste generation and management.	Establish a legislative system under which large-scale mercury waste generators ⁷ are registered (BG45)		
	Establish a system under which mercury waste generators periodically submit information ⁸ on mercury waste management to the relevant authorities and update the information (BG46)		
	Develop a registry based on information provided by mercury waste generators regarding the amounts and types of wastes (BG46)		
	Hold mercury waste generators liable for the mercury waste management until the wastes are handed over to a collector or sent to a disposal facility (BG47)		
	Adopt an approval or permit system for disposal facilities for their operations (BG65)		
	Adopt an approval or permit system for collectors for their operations (BG141)		

⁷ These include power plants, industrial establishments, hospitals, medical and dental clinics, research institutes, and mercury waste collectors.

⁸ This includes name, address, the responsible person, type of business, the amounts and types of mercury waste generated, collection schemes, and the amount of wastes handed over to collectors and disposed of.

<i>Management item</i>		<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>		
		<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>
		Include record-keeping of waste amount and areas landfilled in the standards for the maintenance and management of the disposal facilities (BG218)		
One prevents emissions and releases of mercury to the environment in the process of mercury waste management	Storage before collection	Keep mercury wastes apart from other wastes (B154)		
		Store mercury wastes with the use of closed containers, impermeable concrete pads with runoff controls, or waterproof tarp covers (BG154)		
		Keep the period of waste storage by generators under the period allowed by national standards or regulations and send wastes off-site for appropriate disposal as soon as practical (BG154)		
	Storage before collection			Package appropriately fluorescent and other lamps, mercury-added batteries and thermometers in a way that fit the shape of these wastes for temporary storage (BG155)
	Collection			Prevent breakage and contamination as much as possible when collecting waste mercury-added products (BG139)
				Collect separately the wastes generated from households and other waste generators due to the difference in the quantity of waste generated (BG139)
				Discard the waste mercury-added products in a specially designed container at waste collection stations (BG141)
				Raise consumer awareness by providing information on collection procedures for broken fluorescent lamps, thermometer, etc. (BG142)
		Collect mercury wastes apart from other wastes (BG130, 131, 132, 133, 139)		
			Carry out door-to-door collection (BG145)	
	Transport	Carefully package the wastes in appropriate containers (BG138)		
		Use steel containers rather than plastic containers for transporting mercury wastes (BG127)		
		Package mercury wastes when transporting them (BG150, 151)		
Certify companies that transport mercury wastes as carriers of hazardous materials and wastes (BG152)				
One prevents emissions and releases of mercury to the environment in the process of mercury waste management				

<i>Management item</i>		<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>			
		<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>	
One prevents emissions and releases of mercury to the environment in the process of mercury waste management		Qualify and certify personnel as handlers of hazardous materials and wastes (BG152)			
		Track appropriately mercury wastes during transport until they have reached their final destination (BG151)			
	Storage before the disposal	Avoid building storage facilities in floodplains, wetlands, groundwater, earthquake zones, Karst terrain, unstable terrain and areas with unfavorable weather conditions and incompatible land uses to avoid any risk of mercury releases and possible human and environmental exposure to mercury (BG158)			
		Maintain the temperature in storage facilities as low as feasibly possible (preferably at a constant temperature of 21 degrees Celsius) (B158)			
		Install fire alarm and fire suppression systems in the storage facilities (B158)			
		Create negative pressure environment in the storage facilities to avoid mercury emissions escaping from buildings (B158)			
		Cover the floors of storage facilities with mercury-resistant materials to prevent seepage or penetration of mercury from accidental leaks and spills (BG158)			
			Store in appropriate containers and at designated facilities (BG161)		
			Purify wastes consisting of mercury or mercury compounds to the extent possible in order to avoid chemical reactions and the degradation of containers; A mercury content greater than 99.9 weight per cent is recommended (BG163).		
				Store liquid wastes on trays that can store more than 125% of the liquid waste volume; Solid wastes should be stored in sealed containers such as barrels or pails, steel waste containers or in specially constructed containers that do not release mercury vapour (BG164, 165)	
One prevents emissions and releases of mercury to the environment in the process of	Treatment	Create negative pressure environment at the recovery facility for the entire process (BG169)			
		Create a system under which the exhausted air from the recovery process pass through a series of particulate filters and a carbon bed before it is emitted to the environment (BG169)			

<i>Management item</i>		<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>			
		<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>	
mercury waste management			Employ a closed system at facilities (BG169)		
			Recover mercury from mercury-added equipment that easily releases mercury into the environment when broken and wastes contaminated with high concentrations of mercury (BG170)		
			Remove materials other than those containing mercury by crushing and air separation, dewatering of sludge, and removal of impurities as pre-treatment (BG174)		
			Dispose absorption materials used in the process of collection of mercury, other heavy metals, and metal ion as hazardous waste (BG186)		
			Purify the collected mercury by successive distillation, since high purity will help to prevent chemical reactions between the container and impurities (BG188)		
			Treat mercury wastes before they undergo final disposal so that they meet the acceptance criteria of disposal facilities (BG189)		
One prevents emissions and releases of mercury to the environment in the process of mercury waste management	Final disposal	Stabilize (and solidify) the wastes before they undergo final disposal (BG189).	May dispose wastes contaminated with mercury or mercury compounds that meet the acceptance criteria for specially engineered landfills, as defined by national or local regulations, in specially engineered landfills (BG213).	Prohibit discharge of leachate, if it contains mercury, from disposal facilities that accept mercury-added products such as thermometers into the aquatic environment	
		May dispose stabilized and solidified wastes consisting of mercury or mercury compounds in specially designated landfills where additional measures to minimize releases and the methylation of mercury are taken if they meet the acceptance criteria for specially engineered landfills defined by national or local regulations (BG214)			
		Implement periodical inspection of disposal facilities (BG66)			
		Establish legislation for special inspection of disposal facilities (BG66)			

<i>Management item</i>	<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>		
	<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>
One prevents emissions and releases of mercury to the environment in the process of mercury waste management	Update requirements for granting approvals or operating permits of disposal facilities (BG65)		
	Take necessary measures for the prevention of rainwater and groundwater inflow into the landfill area (BG218)		
	Conduct long-term monitoring of mercury and methylmercury releases from specially engineered landfills into air, groundwater, etc. (BG214)		
	Avoid surface sealing that is permeable to air in specially engineered landfills in the long-term since mercury sulphide can become gaseous mercury and sulphur dioxide (BG216)		
	Landfill mercury wastes isolated from other wastes to prevent them from being mixed with different types of wastes (BG218)		
One prevents emissions and releases of mercury to the environment in the process of mercury waste management	Select locations in geological formations that are extremely stable and not in areas subject to earthquakes for underground storage sites (BG230)		
	Select locations in geological formations that are well below zones where groundwater is present or in formations that are completely isolated from water-bearing zones by impermeable rock or clay layers for underground storage sites (BG230)		
	Separate completely the underground storage sites from active mining areas and areas that may be reopened for mining (BG230)		
	Compensate the missing or inadequate barrier properties of the host rock with a multi-barrier system (e.g. artificial barriers such as packing of wastes and specially designed storage and natural barrier such as geological formations) if the host rock under consideration shows any deficiencies (BG232, 233)		
	With respect to rocks under clay cover, ensure that the thickness of host rock body for disposal is approximately 100 m and that the disposal depth is between 500 and 1,000 m (BG234)		
	With respect to clay or claystone, ensure that the thickness of host rock body for disposal is up to 400 m and that the disposal depth is between 400 and 500 m (BG234)		

<i>Management item</i>		<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>		
		<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>
One prevents emissions and releases of mercury to the environment in the process of mercury waste management		With respect to layered rock salt, ensure that the thickness of host rock body for disposal is approximately 100 m and that the disposal depth is between 650 and 1,100 m (BG234)		
		With respect to rock salt dome, ensure that the thickness of host rock body for disposal is above 1,000m and the disposal depth is 800m (BG234)		
		Require site-specific risk assessment in accordance with pertinent national legislation for planned underground storage facility (BG227)		
		Consider salt mines and hard rock formations as an option for locating permanent underground storage facilities (BG227)		
		Install fire prevention systems (BG217)		
		Prepare contingency plans to mitigate the impacts of spills, fires, and other potential emergencies prior to the transport of wastes (BG151)		
		One prevents emissions and releases of mercury to the environment in the process of mercury waste management	Measures in case of emergencies	
				Clean up any waste mercury-added products that are broken during handling and store all clean-up materials outdoors until they are collected for further management (BG155)
Prepare emergency response plans for each stage of the mercury waste treatment ⁹ (BG265)				
				Inform the public of clean-up methods so that individuals can clean-up by themselves if the spill of mercury from waste mercury-added products is small and simple (BG267, 268)

⁹ The principal elements of an emergency response plan include the identification of potential hazards; compliance with legislation governing emergency response plans; specification of actions to be taken in emergency situations, including mitigation measures, personnel training plans, communication targets and methods to be used in case of emergency; and specification of the method and frequency of testing of emergency response equipment.

<i>Management item</i>	<i>Items prescribed in the BG (Number in parenthesis refer to the number of paragraph in BG)</i>		
	<i>Wastes consisting of mercury or mercury compounds</i>	<i>Wastes contaminated with mercury or mercury compounds</i>	<i>Waste mercury-added products</i>
	Prepare emergency response measures in case of mercury contamination caused by inappropriate management of waste mercury (BG251, 252)		
	Hold mercury waste generators liable for remediation or compensation of any environmental or health damages if such damages occur (BG47)		