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**Conference of the Parties to the
Minamata Convention on Mercury
Third meeting**

Geneva, 25–29 November 2019

Item 5 (c) of the provisional agenda*

**Matters for consideration or action by the
Conference of the Parties: mercury waste,
in particular the consideration of relevant thresholds**

**Outcome of the work of the group of technical experts on
mercury waste thresholds**

Note by the secretariat

1. In its decision MC-2/2, the Conference of the Parties established a group of technical experts to proceed with the discussion on mercury waste thresholds during the intersessional period leading up to the third meeting of the Conference of the Parties, as per the provisions of paragraph 2 of article 11 of the Convention. The group's mandate was to focus its discussions on the following matters:

(a) Work to further clarify and refine the coverage of each of the three categories of mercury waste listed in paragraph 2 of article 11;

(b) The development of a comprehensive list of mercury waste falling under subparagraph 2 (a) of article 11, as well as an indicative list of mercury waste that might fall under subparagraphs 2 (b) and (c) of article 11;

(c) The development, as a priority, of relevant approaches and methodologies for establishing thresholds for mercury waste falling under subparagraph 2 (c) of article 11 and, if possible, the recommendation of specific thresholds for this waste; the group was also to consider the relevance of thresholds for categories of waste falling under subparagraphs 2 (a) and 2 (b) of article 11;

(d) Work, as a separate and differentiated matter, to identify approaches for establishing thresholds for overburden, waste rock and tailings, except from primary mercury mining, during the intersessional period.

2. Twenty-five members were nominated through the bureau representatives, consisting of five technical experts from parties in each of the five United Nations regions: from Nigeria, Madagascar, Mali, Mauritius and Senegal for Africa; from China, Iran (Islamic Republic of) (2 experts), Japan and Jordan for Asia and the Pacific; from Armenia, Czechia, Estonia, Romania and the European Commission for Central and Eastern Europe; from Argentina, Chile, Costa Rica, Guyana and Jamaica for Latin America and the Caribbean; and from Denmark, Germany, Sweden, Switzerland and the United States of America for Western Europe and other States.

* UNEP/MC/COP.3/1.

3. In decision MC-2/2, the Conference of the Parties also invited parties to submit the following information:
- Examples of wastes to be added to the annex to document UNEP/MC/COP.2/6, including, for wastes consisting of mercury compounds, specific names of compounds, and, for wastes containing mercury or mercury compounds (i.e., mercury-added products), the names and types of the mercury or mercury compounds, and pictures, if available;
 - Current practices for managing overburden, waste rock and tailings from mining other than primary mercury mining (e.g., laws, regulations and guidelines) and various approaches to thresholds for special care/handling, if any;
 - Sampling and analysis methods that might be useful for verifying waste thresholds.
4. The group of technical experts held two teleconferences, during which it elected its co-chairs, Ms. Oluwatoyin Olabanji (Nigeria) and Mr. Andreas Gössnitzer (Switzerland), agreed to invite eight experts from industry and civil society to participate as observers, as provided in decision MC-2/2, and reviewed the input received from parties and other stakeholders.
5. The group also held a face-to-face meeting in Osaka, Japan, from 27 to 29 May 2019. A workshop on synergies in mercury waste management, co-organized by the secretariat, the International Environmental Technology Centre and the Ministry of the Environment of Japan, was held back to back with the meeting, on 30 and 31 May 2019.
6. In decision MC-2/2, the Conference of the Parties also invited the Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal to consider reviewing, as appropriate, its technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds.¹ In May 2019, the Conference of the Parties to the Basel Convention, in its decision BC-14/8, decided that the technical guidelines should be updated and established a small intersessional working group to assist in the updating, calling on its members to cooperate with the group of technical experts on mercury waste thresholds if invited to do so.
7. A draft decision on mercury waste thresholds based on the work of the group of technical experts is set out as annex I to this note, and a report on the work of the group is presented as annex II. The report refers to lists of mercury compounds and mercury-added products used by parties,² which have been compiled in document UNEP/MC/COP.3/INF/18. The report of the group's meeting in Osaka is available on the Convention website.³

Suggested action by the Conference of the Parties

8. The Conference of the Parties may wish to review the outcome of the work done by the group of technical experts during the intersessional period and consider the draft decision set out in annex I to this note.

¹ UNEP/CHW.12/5/Add.8/Rev.1.

² *Reporting Requirements for the TSCA Mercury Inventory* of the United States Environmental Protection Agency (https://www.epa.gov/sites/production/files/2018-06/documents/mercury_reporting_requirements_for_the_tsc_mercury_inventory_final_rule.pdf) and the European Union *Inventory of existing mercury-added products and manufacturing processes involving the use of mercury or mercury compounds* ([https://circabc.europa.eu/sd/a/ef04cabe-8f8e-484f-8e2f-dcbbc352c5a2/Inventory%20art%208\(7\)%20Mercury%20Reg%202018-07-02.pdf](https://circabc.europa.eu/sd/a/ef04cabe-8f8e-484f-8e2f-dcbbc352c5a2/Inventory%20art%208(7)%20Mercury%20Reg%202018-07-02.pdf)).

³ <http://www.mercuryconvention.org/Meetings/Intersessionalwork/tabid/7857/language/en-US/Default.aspx>.

Annex I

Draft decision MC-3/[--]: Mercury waste thresholds

The Conference of the Parties,

Welcoming the outcome of the work of the group of technical experts on mercury waste thresholds,

Taking note of decision BC-14/8 adopted by the Conference of the Parties to the Basel Convention at its fourteenth meeting,

1. *Decides* that no threshold needs to be established for mercury waste falling under subparagraph 2 (a) of article 11, and that waste listed in table 1 of the annex to the present decision shall be regarded as such mercury waste;

2. *Decides* that no threshold needs to be established for mercury waste falling under subparagraph 2 (b) of article 11, and that discarded or end-of-life mercury-added products that are disposed of, are intended to be disposed of or are required to be disposed of, including those listed in table 2 of the annex to the present decision, shall be regarded as such mercury waste;

(Option 1 for paragraph 3¹)

3. *Decides* that the threshold for mercury waste falling under subparagraph 2 (c) of article 11 shall be 25 mg/kg expressed as total mercury, and that parties may refer to table 3 in the annex to the present decision to identify such mercury waste;

(Option 2 for paragraph 3)

3. *Decides* that a threshold should be established for mercury waste falling under subparagraph 2 (c) of article 11, and requests the group of technical experts to do further work to establish the threshold, taking into account table 3 in the annex to the present decision;

4. *Decides* that, at present, there is no need to develop thresholds for overburden and waste rock from mining other than primary mercury mining, and that thresholds for tailings from mining other than primary mercury mining should be established in a two-tiered approach using the threshold described in paragraph 3 as the first tier and a threshold based on mercury release potential as the second tier, and requests the group of technical experts to do further work to establish the second-tier threshold;

5. *Decides* to extend the mandate of the technical expert group until the fourth meeting of the Conference of the Parties, and calls upon the members of the group to cooperate with the small intersessional working group established under the Basel Convention to update the technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds;²

6. *Invites* parties to review the membership of the group of technical experts as necessary and to inform the secretariat of any change in its membership through the bureau representatives of the five United Nations regions;

7. *Requests* the group of technical experts to continue its work electronically to address the matters mentioned in the previous paragraphs and make any necessary updates to the lists in the annex to the present decision and to report on its work to the Conference of the Parties at its fourth meeting;

8. *Invites* the appropriate bodies of the Basel Convention to take into account the present decision in updating the technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds;

9. *Requests* the secretariat to continue to support the work of the group of technical experts.

¹ The group of technical experts on mercury waste thresholds, at its meeting in Osaka, Japan, in May 2019, noted that a proposal had been put forward for a concentration limit of 25 mg/kg as a threshold for identifying waste contaminated with mercury or mercury compounds under the Minamata Convention, and that no other proposals had been made. Two options for paragraph 3 are presented for the Conference of the Parties to consider, depending on whether it agrees with the proposal.

² UNEP/CHW.12/5/Add.8/Rev.1.

Annex to draft decision MC-3/[--]

[containing the tables from the appendix to the report in annex II to the present note, revised as necessary]

Annex II

Report on the work of the group of technical experts on mercury waste thresholds

I. Introduction

1. The Conference of the Parties to the Minamata Convention on Mercury, in decision MC-2/2, gave the group of technical experts on mercury waste thresholds the mandate to focus its discussions on the following matters:

(a) Work to further clarify and refine the coverage of each of the three categories of mercury waste listed in paragraph 2 of article 11;

(b) The development of a comprehensive list of mercury waste falling under subparagraph 2 (a) of article 11, as well as an indicative list of mercury waste that might fall under subparagraphs 2 (b) and (c) of article 11;

(c) The development, as a priority, of relevant approaches and methodologies for establishing thresholds for mercury waste falling under subparagraph 2 (c) of article 11 and, if possible, the recommendation of specific thresholds for this waste; the group would also consider the relevance of thresholds for categories of waste falling under subparagraphs 2 (a) and 2 (b) of article 11;

(d) Work, as a separate and differentiated matter, to identify approaches for establishing thresholds for overburden, waste rock and tailings, except from primary mercury mining, during the intersessional period.

2. This report summarizes the outcome of the work of the group of technical experts on these matters, undertaken through two teleconferences followed by a face-to-face meeting held in Osaka, Japan, from 27 to 29 May 2019.

II. Coverage of three categories of mercury waste

3. Paragraph 2 of article 11 of the 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” that are disposed of or are intended to be disposed of or required to be disposed of by the provisions of national law or the Minamata Convention.¹

4. For the purposes of its work, the group of technical experts designated waste covered by subparagraph 2 (a) of article 11 as “category A waste”, waste covered by paragraph 2 (b) as “category B waste” and waste covered by paragraph 2 (c) as “category C waste”.

5. Category B waste would consist of mercury-added products, not limited to those listed in annex A of the Convention, that are end-of-life, obsolete, broken or discarded. Some of these discarded mercury-added products may be found as components in assembled products. However, municipal, medical or other waste that contains end-of-life mercury-added products but is not segregated is regarded as category C waste when it exceeds thresholds.

6. Category C waste is other waste in which mercury or mercury compounds are present above the thresholds defined by the Conference of the Parties. It includes residues generated by primary mercury mining processes, industrial processes and waste treatment processes in which mercury or mercury compounds are present above the thresholds.

7. Wastes that result from the treatment of mercury wastes² belong to either category A or C.

¹ Article 11 also relies on relevant definitions of the Basel Convention. Under the Basel Convention, “disposal” is defined as any Annex IV operation, and includes deposit into or onto land (D1), release into a waterbody (D6), several recycling/recovery operations and other operations. Waste disposal operations under Annex IV may or may not represent environmentally sound management (ESM). Distinctions between ESM and non-ESM operations are often identified in technical guidelines developed under the Basel Convention.

² Referred to as B3 wastes in the technical guidelines on environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds (UNEP/CHW.12/5/Add.8/Rev.1).

8. For further clarification, tailings from artisanal and small-scale gold mining and processing in which mercury amalgamation is used to extract gold from ore are considered as category C waste. Artisanal and small-scale gold mining tailings contaminated with mercury or mercury compounds result from the use of mercury in the process of amalgamation, and are therefore not excluded from mercury waste by the exclusion provision in paragraph 2 of article 11, which applies only to the mercury compounds that occur naturally in mined materials. Article 11 waste management requirements are expected to be applied at artisanal and small-scale gold mining sites in the context of the implementation of strategies for promoting the reduction of emissions and releases of and exposure to mercury, included in parties' national action plans.

9. The group of technical experts developed a comprehensive list of category A waste and indicative lists for category B and C wastes, in accordance with its mandate from the Conference of the Parties. The lists are set out in the appendix to the present report.

10. It should be noted that some of the substances or objects described in the comprehensive list for category A and the indicative lists for categories B and C could be considered commodities whose usage is allowed under the Convention in certain jurisdictions and circumstances but wastes to be disposed of or intended or required to be disposed of in other jurisdictions and circumstances.

11. The group also discussed whether wastewater might be regarded as category C waste, in relation to the relevance of article 9 (releases). The group noted that a majority of parties regulate wastewater under water pollution legislation, but that some jurisdictions also control wastewater under waste management legislation.

III. Approaches and methodologies for establishing thresholds for mercury waste falling under paragraph 2 of article 11 of the Convention and recommendation of thresholds

A. Relevant approaches and methodologies for establishing thresholds for category C waste

12. Three approaches to establishing thresholds have been identified: (a) total concentration of mercury in a waste, (b) measures of the release potential of mercury in a waste, and (c) a qualitative determination (i.e., a listing approach).

13. Total concentration of mercury in a waste represents the most straightforward type of threshold. It allows the threshold to be based on the intrinsic property of the waste, irrespective of the waste management technology. The use of total concentration of mercury identifies the presence of mercury in the waste and assumes that the more mercury present, the higher its potential to pose an actual hazard. It does not attempt to identify the risk that may be posed by the waste (i.e., the likelihood of exposure with resulting adverse health and/or environmental effects).

14. Measures of release potential of mercury in a waste could be based on the form of mercury in the waste or aspects of the waste matrix that facilitate or retard release to the environment and may be an appropriate basis for thresholds for some wastes. Measures of release potential are, however, linked to particular management conditions (e.g., leach testing to assess groundwater contamination potential of wastes managed on land) and any single test may not address all release pathways.

15. The listing approach would necessitate identifying and naming the wastes falling within category C. Category C waste represents a very diverse group of wastes, however, originating from a wide variety of sources. As a catch-all category, category C would provide an indicative list for guidance purposes rather than a definitive list specifying the boundaries of legal obligations. Accordingly, the listing approach could not be the sole basis for setting thresholds for the coverage of mercury waste under article 11. An indicative list of category C waste is presented in table 3, in the appendix to this report.

16. At present, the group recommends a total-concentration-of-mercury approach based on the intrinsic hazard of the waste.³ The group further recommends that methodologies for measuring release potential be considered in conjunction with subsequent waste management requirements developed under subparagraph 3 (a) of article 11.

³ In the future, as more information become available, it may be possible to develop different thresholds for various wastes.

B. Development of a draft recommendation for specific thresholds for category C waste

17. One way of classifying the estimated intrinsic hazard of waste contaminated with mercury or mercury compounds is by using the Globally Harmonized System of Classification and Labelling of Chemicals.⁴

18. Mercury and mercury compounds are (as pure substances) classified as hazardous to human health or the environment using the Globally Harmonized System. For each relevant hazard class, the Globally Harmonized System sets out cut-off values that determine when a mixture containing mercury or mercury compounds shall be classified as hazardous. For mercury and mercury compounds, it is the environmental (aquatic) hazard that has the lowest cut-off value for classification of mixtures. According to the Globally Harmonized System, mixtures containing mercury or mercury compounds shall be classified as hazardous (acute and chronic category 3 for aquatic ecotoxicity⁵) if their concentration is greater than or equal to 25 mg/kg. One proposal put forward at the face-to-face meeting of the group was a concentration limit of 25 mg/kg as a threshold for identifying category C waste under the Minamata Convention.

19. Sampling, analysis and monitoring are critical components of measuring the mercury content of waste. The group reviewed analytical and sampling methods for measuring mercury in wastes, such as those contained in the Basel Convention technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds.⁶ The group recognized that further information exchange on analytical and sampling methods is needed to assist parties in identifying category C waste.⁷

C. Relevance of thresholds for category A and B waste

20. The group of technical experts has developed a comprehensive list of category A waste, including mercury compounds. The group is of the opinion that waste consisting of mercury is so obviously highly toxic that there is no need for thresholds for category A waste. Such waste may contain varying amounts of mercury or mercury compounds, but as waste, it is all considered harmful or potentially harmful and must be managed in an environmentally sound manner, according to its actual composition.⁸ Any mismanagement of such waste could seriously threaten human health or the environment, and all such waste should be covered by article 11 of the Convention.

21. Category B waste consists of discarded or end-of-life products. If inappropriately managed, such waste could lead to emissions and releases of mercury and mercury compounds that could threaten human health or the environment. Hence, the group of technical experts is of the view that no thresholds are needed for category B waste and that such wastes should all continue to be covered by article 11 of the Convention.

22. Lists of mercury-added products developed by various parties provide useful guidance as to which products likely contain mercury. The group believes that most products would typically exceed a threshold limit developed for category C waste when disposed at their end-of-life. Moreover, the group noted the analytical demands that a threshold limit might impose on some parties, and applying thresholds to products can be complicated and challenging.

⁴ https://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

⁵ The Globally Harmonized System classifies substances and mixtures into three acute (short-term) categories and four chronic (long-term) categories for aquatic ecotoxicity.

⁶ UNEP/CHW.12/5/Add.8/Rev.1. See section III D on sampling, analysis and monitoring.

⁷ For example, chlor-alkali process demolition wastes present a unique challenge for both sampling and analysis. Mercury will be spread unevenly in the physical matrix of solid materials such as metalwork, presenting challenges for sampling.

⁸ For purposes of practical waste management, clear identification and labelling of waste containers is critical to ensuring that the waste is appropriately handled and is sent for environmentally sound management. Such labelling and identification of waste is addressed in the Basel Convention technical guidance for environmentally sound management of mercury waste, and appropriately implemented through national waste management programme procedures.

IV. Approaches for establishing thresholds for overburden, waste rock and tailings, except from primary mercury mining

A. Overburden and waste rock

23. The group of technical experts considers that, at present, the hazard and risk associated with industrial-scale waste rock⁹ and overburden¹⁰ is sufficiently low that it is not necessary to develop a threshold for these sources.

B. Tailings

24. The group of technical experts proposes a two-tiered approach for establishing thresholds for tailings¹¹ from industrial-scale non-ferrous metals mines. The group is in agreement that tailings from other mining sources have a sufficiently low hazard and risk that it is not necessary to develop thresholds for these sources.

25. Under the proposed approach, tailings would be evaluated first using a total mercury content threshold. A leaching threshold would be applied if and only if this threshold is exceeded.

26. This two-tiered approach is appropriate because tailings are different from other wastes addressed by the Convention. First, the scale of tailings from industrial-scale mines is sufficiently large that they need to be given different consideration; the extraordinarily high volumes of tailings dictate that the material be managed in on-site land disposal facilities¹² rather than commercially managed or co-disposed with other wastes. Second, the chemistry of tailings is site-specific and based on local geology and the processing of ore. Third, mine sites are typically located in remote areas, further limiting human exposure pathways of concern.

Tier 1

27. The group proposes a total-concentration-of-mercury threshold to measure the intrinsic hazard of tailings, in the accordance with the approach to be adopted for category C waste.

28. This first tier provides a simple-to-implement, inexpensive way for parties to assess their tailings and establish whether, based on intrinsic hazard characteristics, they should be considered mercury waste under the Convention.

Tier 2

29. Tailings that exceed the tier 1 threshold would be subject to a leaching threshold to determine whether they constitute a mercury waste under the Convention. The group considers the leaching approach appropriate for tailings as they are in most cases disposed of on land and the most relevant risk is posed by migration of mercury to groundwater and other potential drinking water sources.

⁹ Rock that must be broken and disposed of to gain access to and excavate the ore; valueless rock that must be removed or set aside before the milling process. (United States Environmental Protection Agency, 1985, "Report to Congress: Wastes from the Extraction and Beneficiation of Metallic Ores, Phosphate Rock, Asbestos, Overburden from Uranium Mining and Oil Shale"). <https://www.epa.gov/hw/report-congress-wastes-extraction-and-beneficiation-metallic-ores-phosphate-rock-asbestos>

¹⁰ Consolidated or unconsolidated material overlying the mined area. (*ibid.*)

¹¹ A large-volume waste consisting of the materials remaining after the valuable constituents (also termed values) of the ore have been removed by physical or chemical beneficiation, including crushing, grinding, sorting, and concentration by a variety of methods. (*ibid.*)

¹² There are a limited number of exceptions to site-based land disposal.

30. The group of technical experts recognizes that more technical work¹³ needs to be done in order for the Conference of the Parties to agree on appropriate leach testing procedures and an appropriate threshold for mercury in tailings.¹⁴ It further recognizes that in developing countries, capacity-building and knowledge-sharing are needed on analytical techniques for conducting leach testing.

¹³ According to the group, consideration needs to be given to the following:

- Sampling challenges posed by some wastes early in the process of developing an approach to threshold setting.
- The liquid-to-solid ratio in the assay (how many grams of waste per litre of leaching medium) and chemical composition of the leaching medium (acid, what type of acid, pH, distilled water), and how they relate to likely disposal conditions.
- The exposure scenario considered to establish the thresholds; e.g., protection of drinking water from contamination of groundwater sources.
- Attenuation of safety factors included (e.g., dilution factor in migration from waste to groundwater, or uncertainty factor for a more conservative approach).

¹⁴ This additional technical work should take into account legally binding leach testing procedures and thresholds being implemented by parties.

Appendix

Lists of mercury waste falling under paragraph 2 of article 11

Table 1
Comprehensive list of mercury waste consisting of mercury or mercury compounds^a
(subparagraph 2 (a) of article 11)

<i>Type of waste</i>	<i>Waste source^b</i>
Recovered elemental mercury ^c	Mining activity: – Tailings from artisanal and small-scale gold mining Mercury captured from: – Non-ferrous metals roasting and smelting processes – Crude oil and natural gas extraction Treatment of: – Mercury-added products at end-of-life – Waste contaminated with mercury or mercury compounds – Contaminated environmental media Treatment of waste from: – Chlor-alkali, ^d alcoholates (e.g., sodium or potassium methylate or ethylate), dithionite and ultrapure potassium hydroxide solution production with mercury technology, including decommissioning facilities – Polyurethane, vinyl chloride monomer, acetaldehyde production using a mercury-containing catalyst
Elemental mercury	– Mercury stockpile (laboratories, dental offices, educational and research institutions, landfills, dumpsites, government institutions, lighthouses)
Mercury (I) chloride and mercury (II) chloride	– Zinc, lead, copper and gold roasting and smelting processes – Reagents – Calomel electrode for electrochemical measurements – Medicine/pharmaceuticals – Vinyl chloride monomer catalyst – mercury (II) chloride
Mercury (II) oxide (mercuric oxide)	– Dry cell batteries, pigment in paints and glass modifiers, fungicide, cosmetics, analytical reagent, antifouling paints
Mercury (II) sulfate (mercuric sulfate)	– Lab reagent, catalyst used for the production of acetaldehyde
Mercury (II) nitrate (mercuric nitrate)	– Oxidizing agent, lab reagent
Cinnabar	– Primary mercury mining – Stabilization of waste mercury for storage and/or disposal
Mercury sulfide	– Pigment – Zinc, lead, copper and gold roasting and smelting process – Stabilization of waste mercury for storage and/or disposal
Other mercury compounds ^e	

^a The Convention defines a mercury compound as any substance consisting of atoms of mercury and one or more atoms of other chemical elements that can be separated into different components only by chemical reactions.

^b A facility or activity where waste is likely to be generated or accumulated.

^c Recovered mercury as described in article 11, paragraph 3 (b).

^d Recovery can sometimes occur without treatment.

^e See *Reporting Requirements for the TSCA Mercury Inventory* of the United States Environmental Protection Agency (https://www.epa.gov/sites/production/files/2018-06/documents/mercury_reporting_requirements_for_the_tsc_mercury_inventory_final_rule.pdf) and the European Union *Inventory of existing mercury-added products and manufacturing processes involving the use of mercury or mercury compounds*

([https://circabc.europa.eu/sd/a/ef04cabe-8f8e-484f-8e2f-dcbbc352c5a2/Inventory%20art%208\(7\)%20Mercury%20Reg%202018-07-02.pdf](https://circabc.europa.eu/sd/a/ef04cabe-8f8e-484f-8e2f-dcbbc352c5a2/Inventory%20art%208(7)%20Mercury%20Reg%202018-07-02.pdf)).

Table 2
Indicative list of waste containing mercury or mercury compounds (subparagraph 2 (b) of article 11)^a

<i>Type of waste</i>	<i>Waste source^b</i>
Non-electronic measuring devices (barometers, hygrometers, manometers, thermometers, sphygmomanometers)	Hospitals, clinics, healthcare facilities (human and animal), pharmacies, households, schools, laboratories, universities, industrial facilities, airports, meteorological stations, ship recycling facilities
Electrical and electronic switches, contacts, relays and rotating electrical connectors with mercury	Dismantling facilities of waste electrical and electronic equipment (relays, connectors and switches), industrial facilities (attached to boilers), households, offices
Fluorescent bulbs, high intensity discharge (HID) bulbs (mercury vapour bulbs, metal halide and high-pressure sodium bulbs), neon/argon lamps	Households, industrial and commercial facilities, automobile facilities, collection points
Batteries/accumulators containing mercury	Households, industrial and commercial facilities, collection points
Biocides and pesticides containing mercury and their formulations and products	Agricultural, horticultural, industrial and commercial facilities (including stockpiles), laboratories
Paints and varnishes containing mercury	Industrial and commercial facilities, households
Pharmaceuticals containing mercury for human and veterinary uses, including vaccines	Industrial and healthcare facilities (including stockpiles), livestock industry
Cosmetics and related products containing mercury	Industrial facilities (including stockpiles)
Dental amalgam	Dental offices, dental schools, crematoria
Scientific instrument used for the calibration of medical or scientific devices	Laboratories, institutions ^c (including stockpiles)
Other mercury products ^d	Many various sources
Products essential for civil protection and military uses ^e	Military facilities (including stockpiles)

^a Mercury-added products listed in the “type of waste” column of this table are regarded as waste under subparagraph 2 (b) of article 11 when they become end-of-life, obsolete, broken or discarded products.

^b A facility or activity where waste is likely to be generated or accumulated.

^c Institutions include public and private.

^d See *Reporting Requirements for the TSCA Mercury Inventory* of the United States Environmental Protection Agency (https://www.epa.gov/sites/production/files/2018-06/documents/mercury_reporting_requirements_for_the_tsc_mercury_inventory_final_rule.pdf), the *European Union Inventory of existing mercury-added products and manufacturing processes involving the use of mercury or mercury compounds* ([https://circabc.europa.eu/sd/a/ef04cabe-8f8e-484f-8e2f-dcbbc352c5a2/Inventory%20art%208\(7\)%20Mercury%20Reg%202018-07-02.pdf](https://circabc.europa.eu/sd/a/ef04cabe-8f8e-484f-8e2f-dcbbc352c5a2/Inventory%20art%208(7)%20Mercury%20Reg%202018-07-02.pdf)) and information relevant to thresholds for mercury wastes, submitted by Japan (<http://www.mercuryconvention.org/Portals/11/documents/meetings/COP3/submissions/Japan-Waste.pdf>).

^e No public inventory.

Table 3
Indicative list of waste contaminated with mercury or mercury compounds (subparagraph 2 (c) of article 11)^a

<i>Type of waste</i>	<i>Waste source^b</i>
Waste from industrial pollution control devices or cleaning of industrial off-gases ^c	Flue gas from sources such as: <ul style="list-style-type: none"> – Extraction and use of fuels/energy sources – Smelting and roasting processes in the production of non-ferrous metals – Production processes with mercury impurities – Recovery of precious metals from waste electrical and electronic equipment – Coal combustion – Waste incineration and co-incineration – Crematoria
Bottom ash	<ul style="list-style-type: none"> – Coal combustion – Biomass fired power and heat generation – Waste incineration
Wastewater treatment residues/slurries ^d	Treatment of wastewater from: <ul style="list-style-type: none"> – Extraction and use of fuels/energy – Production of mercury-added products – Manufacturing processes in which mercury or mercury compounds are used – Primary non-ferrous metals production – Production processes with mercury impurities – Recovery of precious metals from waste electrical and electronic equipment – Waste incineration, co-incineration and other thermal treatment – Crematoria – Healthcare facilities – Controlled landfills leachate – Uncontrolled dumping of wastes – Agricultural facilities
Sludge	<ul style="list-style-type: none"> – Separator tanks and sedimentary sand tanks for refining of crude oil, natural gas production and processing, drilling, ship cleaning, chemical processes, etc. – Treatment of wastes contaminated with mercury (e.g., chemical precipitation and chemical oxidation)
Oil and gas refining catalyst	<ul style="list-style-type: none"> – Refining of crude oil – Processing of natural gas
Tailings and extraction process residues	<ul style="list-style-type: none"> – Primary mercury mining – Artisanal and small-scale gold mining
Rubbles, debris and soil ^e	<ul style="list-style-type: none"> – Construction/demolition – Remediation of contaminated sites
Other waste from manufacturing processes using mercury or mercury compounds ^f	<ul style="list-style-type: none"> – Chlor-alkali production with mercury technology – Production of alcoholates (e.g., sodium or potassium methylate or ethylate) – Dithionite and ultrapure potassium hydroxide solution – Vinyl chloride monomer (VCM) production with mercuric chloride (HgCl₂) catalyst – Acetaldehyde production with mercury sulphate (HgSO₄) catalyst, etc.
Other waste from the manufacturing of mercury-added products ^g	Manufacturing of mercury-added products
Other waste from natural gas cleaning ^h	Natural gas cleaning
Wastes from waste treatment facilities ⁱ	Waste treatment facilities

^a Wastes listed in this table are regarded as mercury waste when they exceed thresholds. Waste exceeding the established threshold but not listed here would also be considered mercury waste.

^b A facility or activity where waste is likely to be generated or accumulated.

^c Includes filters and activated carbon.

^d Include filters and resins.

^e Contaminated soil transported off-site is regarded as waste.

^f Mercury cells, mercury recovery units (retort), waste catalysts, decommissioning or demolition waste, personal protective equipment, elements used to contain mercury spills, etc.

^g Process residues, demolition waste, etc.

^h Scale removed from pipework and pipe cleaning equipment, etc.

ⁱ Waste treated to stabilize/solidify mercury in the waste, fluorescent coatings, metal and glass.