

# **Draft Guidance on the methodology for preparing inventories of releases pursuant to Article 9 of the Minamata Convention on Mercury**

*[To be further completed with a list of potentially relevant point sources etc]*

## **Background**

Article 9 of the Minamata Convention on Mercury, which deals with releases of mercury and mercury compounds to land and water from point sources not addressed in other provisions of the Convention, sets out the obligation that “[e]ach Party shall establish, as soon as practicable and no later than five years after the date of entry into force of the Convention for it, and maintain thereafter, an inventory of releases from relevant sources”.

A “relevant source” means any significant anthropogenic point source of release as identified by a Party that is not addressed in other provisions of the Convention. Paragraph 3 of Article 9 provides that each Party shall, no later than three year after the date of entry into force of the Convention for it and on a regular basis thereafter, identify the relevant point source categories. The Conference of the Parties in its Decision MC-3/4 requested the group of technical experts to work further on the categories of point sources of releases proposed in the report of the group submitted to the third meeting of the Conference of the Parties. *[List of potentially relevant point source categories will be added as developed by the group of technical experts, with explanation on how these key terms apply to certain categories.]*

Paragraph 7 of Article 9 provides that the Conference of the Parties shall, as soon as practicable, adopt guidance on the methodology for preparing inventories of releases.

Many countries, as part of their preparation for becoming a Party to the Convention and for its early implementation, develop a national mercury profile, including identification of significant sources of emissions and releases, as well as inventories of mercury and mercury compounds. Parties may also prepare inventories under other articles of the Convention, such as Article 8 (a mandatory inventory of emissions), Article 18 (pollutant releases and transfer registers, PRTR) and Article 19 (inventories of use, consumption, emissions and releases). These may involve processes distinct from those used for the inventory required under Article 9, but a Party may choose to use the same methodology or consistent methodologies for all inventories to enhance consistency and synergies.

A robust inventory will support Parties in their domestic implementation of the Convention, such as the development of a national plan setting out targets, goals and outcomes, establishment of limit values, use of best available technologies and best environmental practice, and multi-pollutant control strategies. It will also enable them to demonstrate the extent to which implementation is achieving the objectives of the Convention, and to report on the effectiveness of the implementation measures pursuant to Article 21 (reporting). It will furthermore contribute to Article 22 (Effectiveness evaluation) by providing comparable data on releases of mercury. The benefit of a robust inventory is not limited to the implementation of the Minamata Convention but extend to the Sustainable Development Goals and other global, regional and national policies.

For the purposes of completeness, Parties should include in their inventories information about releases from all sources within the categories identified pursuant to paragraph 3 of Article 9. This could be particularly useful to Parties to determine which specific point sources they should address as relevant sources to control releases.

## **Use of existing inventory**

Paragraph 2 of Article 18 provides that each Party shall use existing mechanisms or give consideration to the development of mechanisms, such as PRTR where applicable, for the collection and dissemination of information on estimates of its annual quantities of mercury and

mercury compounds that are emitted, released or disposed of through human activities.<sup>1</sup> Where a PRTR program does not exist, an alternative approach is to use the UNEP Mercury Inventory Toolkit. Where a Party has established a PRTR, data about point source of mercury releases – including from sources identified as relevant by the Party – are likely to be included. The search function of the PRTR should make it possible to identify and easily obtain data about point source mercury releases.

### **Steps to establish a releases inventory**

In case a Party has not established PRTR, or decides to establish a releases inventory separate from or complementing PRTR, the basic methodology to establish a releases inventory typically involves many or all of the following steps:

- Plan the approach for development of the releases inventory, within available resources, and consider how to collect, handle and review data, including any quality control and quality assurance processes
- Collect existing releases data as a useful starting point
- Identify relevant sources within each source category
- Establish facility-based releases reporting requirements
- Collect the releases reports from facilities on a periodic basis (e.g. annually)
- Develop a database to store the reported releases data
- Facilitate analysis of the results
- Make the data publicly accessible and searchable.

Once it has been established, arrangements must be made to maintain and update the inventory, in line with Paragraph 6 of Article 9.

The following sections provide guidance for Parties on some of these steps.

### **Initial steps: identifying the relevant point source categories and facilities**

In preparing to implement the Minamata Convention, a Party will develop a plan on how to develop the inventory, including how to collect, review and validate data. An initial step for the Party may then be to identify the sources of mercury releases present within its territory, and also to identify and collect any existing inventories.

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<sup>1</sup> There is a wealth of experience available from countries and from international bodies and organizations, such as OECD, UNECE, UNEP and UNITAR, that are active in the development of PRTRs. See e.g. the note on Technical assistance and resources [ECE/MP.PRTR/WG.1/2016/12](#).

More information on the establishment and implementation of PRTRs may be found at the website [PRTR.net](#), which has been developed and is maintained by the Organization for Economic Cooperation and Development (OECD), in cooperation with the United Nations Economic Commission for Europe (UNECE).

Other useful resources include:

- Inter-Organization Programme for the Sound Management of Chemicals (IOMC) [Toolbox](#)
- Detailed [guidance](#) developed by OECD
- [Guidance](#) on the Implementation of the UNECE Protocol on PRTRs.

UNITAR also makes available a number of [resources](#) that facilitated countries' implementation of PRTR systems, such as links to international guidelines, factsheets, videos, a network of international experts and [e-learning opportunities](#).

It should be noted that the PRTRs may have thresholds for reporting, under which facilities emitting less than the threshold have no obligation to report. A Party may consider using thresholds for mercury that are low enough to capture relevant sources. A Party may also complement the reported release amount of mercury with estimates of releases from smaller sources.

PRTR and its related legislation cover multiple pollutants and source categories. They regulate reporting requirements for the facilities including the reporting cycle, data collection and record keeping, quality assessment by the competent authority, and the dissemination of information to the public and other stakeholders

In doing so, a Party ought to identify the relevant point source categories pursuant to Paragraph 3 of Article 9. A relevant source is defined as any significant anthropogenic point source of release as identified by a Party that is not addressed in other provisions of the Convention. *[Refer to the list of potentially relevant point source categories.]* Parties are to determine which anthropogenic point sources of release to land or water within their territory are significant. In doing so, they may take into account the quantity of the releases, their location, the environmental conditions and exposure pathways and other factors of national concern

After identifying relevant point source categories, a Party will need to identify the facilities within each of the point source categories present at the national level: once again, existing inventories may already have much of this information. This would be followed by the development of a quantitative inventory by collecting information from each facility considered to be a relevant source within the source category.

### **Collection of releases information from individual facilities**

A Party will need to collect recorded or estimated data about the point source releases from individual facilities covered by Article 9 over a defined time period. This may be done under PRTR legislation, using licencing conditions associated with the relevant source category, or statistical surveys. Typically, inventories are based on a calendar year, so releases are calculated on an annual basis. Developing countries may start with a broader time interval. The inventory under Article 9 is required within five years of the entry into force of the Convention for that Party. The collection of data earlier than this date, however, would contribute to robust estimates.

The inventory should ideally be based on the direct measurement of point source releases, where it is possible to measure representative emissions levels and also where supporting information is available on the frequency and duration of mercury releases. *[Consider technical guidance on release measurement]* This will produce the most robust estimates. In practice it may not always be possible to obtain measured data from facilities. In that case methodology exists for engineering estimates or mass balance calculations and estimating releases through the use of release factors, as in the UNEP Inventory Toolkit. .

A release factor is a representative value relating the quantity of mercury released to the activity level associated with the source (for example, the throughput of raw material). Other indirect measuring techniques, such as engineering estimates or mass balance calculations can also be used in the absence of direct measurement.

*[In order to make this guidance more specific and hands on it could refer to reports, papers, guidelines etc describing methodologies for different sectors.*

- *Publicly available methodologies could be linked to*
- *Other methodologies made available from Parties or from other sources could be attached to this guidance as appendices.]*

A Party could choose also to use a combination of approaches. Estimates using release factors may provide a better estimate of emissions for a category of sources rather than for any individual sources. It may be particularly useful for example to use aggregated releases for sources which are too numerous or costly to monitor individually, or where individual reporting would be too burdensome. The methodology may differ from one source category to another, and could even be different for different types of facility within a source category.

There are advantages in progressively adopting new and more accurate methods, for example, replacing data based on estimation techniques with actual monitored data as they become available, or replacing generic release factors with factors which are more representative of the circumstances in the Party's territory or at a specific source. At the same time, however, maintaining comparability between data obtained over time, so that trends in controlling releases are clear, is also necessary for the purposes of tracking progress in reducing releases.

A Party may wish to establish policies and procedures about how methodological changes are introduced and how frequently this is done, and have arrangements in place where possible to help identify which changes over time are the result of real changes in releases and those which reflect improvements in estimating techniques.

Where no national approaches are in place, a Party may find it useful to adopt the methodologies set out in international guidance, such as the UNEP Toolkit<sup>2</sup>.

In practice, the decision on the methodology to be used should be based on a combination of factors and may change over time, reflecting what is practical and affordable and what is most suitable in the light of national circumstances. At a minimum, however, there should be transparency about the methodology being used, so that the information in the inventory can be correctly interpreted.

Where the information can practicably be obtained, it is useful to record details of the speciation of the releases – that is, whether the released substance is elemental mercury, an inorganic mercury compound or an organic mercury compound. This information may be useful in predicting the fate of mercury and mercury compounds in the aqueous and terrestrial environment and their risk to human health and the environment.

Where the information can practicably be obtained, it is also useful to record details of other pollutants released together with mercury (that together acts as a "finger-print" of the specific release source). This information may be useful in tracking and appointing sources of mercury observed / monitored in the aqueous and terrestrial environment and direct abatement measures to the right release sources.

Once the national methodologies have been established, Parties should provide specific guidance to facilities on the estimation methods to be used, quality control and quality assurance considerations, and the format for data submission. National authorities should also apply quality control/validation techniques to the data to ensure that it is robust and reliable. Where PRTR system exists, this is usually a part of its reporting.

### **Development of a reporting and data management system**

To facilitate reporting, a Party could set up a dedicated releases inventory website to disseminate information, thus enabling industries to download the relevant guidance materials, including reporting templates. Industries should be encouraged to submit their reports in an electronic format, to allow for easier data handling and analysis. A Party should require facilities to meet fixed reporting requirements and timelines.

A Party should create internal databases to store facility information (such as the facility's name, location, corporate ownership and other details) and the reported releases data. This database should be searchable, easy to use and conducive to further data analysis.

### **Making the data publicly accessible and searchable**

Individual facility releases data and releases summary reports containing non-confidential information, as well as the methodologies or monitoring methods used, should be made available to the public, consistent with the Party's obligation under Article 18 (Public information, awareness and education). If a Party has set up a website to assist industries in reporting their releases, the same website could be used to disseminate the releases data, subject to suitable security arrangements to protect the data. The website should allow users to conduct customized data searches, such as for an individual facility, industrial sector, geographical region, or a specific reporting year.

### **UNEP Inventory Toolkit**

UNEP has developed a set of tools, consistent with the above methodology, for use in establishing inventories. This UNEP toolkit could be a good starting point for Parties developing their own releases inventories. The toolkit potentially covers all sources of mercury emissions and releases to all environmental media, but, to meet the requirements of Article 9, it can also be used to establish more limited inventories covering the point source release to land and water from relevant sources identified by the Party. Over time, a Party should strive to improve and develop their releases inventories, and the guidance outlined above provides a basis for such an undertaking.

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<sup>2</sup> UNEP Toolkit for Identification and Quantification of Mercury Releases, available at: <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/mercury/mercury-inventory-toolkit>

The toolkit is available at two levels: inventory level 1 and inventory level 2.

Inventory level 1 uses factors derived from experience for input and releases to calculate mercury inputs and releases to all environmental media, and presents results as estimates.

Inventory level 2 aims to lead countries through the process of enhancing and refining their initial inventories. It provides guidance on the different techniques and stages of developing the inventory, and includes illustrative examples and extensive information on mercury release sources. It provides a simple methodology, together with an accompanying database to ensure consistency in the development of national inventories.

The methodology for level 2 aims for the identification and quantification (where possible) of all sources of emissions and releases of mercury at the national level. The first step is the establishment of a screening matrix, with an identification of the main source categories present. A Party could choose to limit the sources to those relevant source categories identified by the Party. The second step is the classification of the main source categories into subcategories, to identify individual activities that potentially release mercury. This produces a qualitative identification of source types. The third step involves the development of a quantitative inventory. For a detailed quantitative inventory, activity volume data and process-specific information are gathered and may then be used to calculate estimated mercury releases from the identified sources. The toolkit contains procedures and equations for the calculation of all emissions and releases.

As a final stage, the results of the inventory are compiled. The toolkit recommends the use of a standardized presentation format, which ensures that all known sources are considered (whether they are quantified or not). This allows any data gaps to be revealed, and assists in ensuring that inventories are comparable and transparent. It also provides an opportunity to review, over time, changes in the national emissions and releases of mercury from all sources. This quantitative review conducted under level 2 would contribute to reporting requirements under paragraph 8 of Article 9.