

Minamata Convention on Mercury. Reporting obligations of the Parties to the Convention and the sources of data existing in Poland

Ewa Strzelecka-Jastrzab^{1,*}

¹ Institute for Ecology of Industrial Areas, 6, Kossutha St., 40-844 Katowice, Poland

Abstract. After that, when more than 60 years ago in the Japanese city of Minamata there was caused a mass poisoning of residents by seafood contaminated with mercury, Minamata Convention on Mercury came into force on August 16, 2017. To date, the Convention has been signed by 128 States, the signatories of the Convention and ratified by 83 States - Parties to the Convention. The Convention imposes a number of obligations on the Parties to the Convention, including the reporting obligation. The paper analyses the reporting obligations of the Parties to the Convention, which are in force after the entry into force of the Convention, pursuant to the provisions contained therein. In addition, the existing sources of quantitative data on mercury in Poland are characterized.

1 Introduction

In the 50s of the 20th century, operating in the area of Minamata City, on the island of Kyushu, the chemical factory was emitting into the sea the sewage containing methylmercury. Despite the relatively low concentrations of mercury ions in water, in the meat of large predatory fish and seafood, as further links in the food chain, methyl- and dimethylmercury accumulation have been occurred. Because fish and crabs were the main diet ingredients of the surrounding villages residents, after some time people become poisoned. The first cases were reported in April 1956. Soon the whole "epidemic" of the disease of a previously unknown neurological syndrome was stated, which was called Minamata disease. This disease is a set of symptoms that include damage to the nervous system as a result of mercury poisoning. The disease destroys the brain in particular, causes visual disturbances, motor coordination disorders, mental retardation, and death. In total, by 2001, 2265 victims had been officially recognised as having Minamata disease, 1784 of whom had died [1].

After almost 60 years since these events, at the fifth session of the Intergovernmental Negotiating Committee on mercury in Geneva on 19 January 2013, the Minamata Convention on Mercury was agreed. At the conclusion of the negotiations, the text of the Convention was adopted and opened for signature at the Diplomatic Conference held in Minamata and Kumamoto, Japan, from 9 to 11 October 2013. To date, the Convention has

* Corresponding author: e.strzelecka-jastrzab@ietu.pl

been signed by 128 signatory States, including Poland, on September 24, 2014, and has been ratified 83 States - Parties to the Convention [2].

Pursuant to Article 31 (1), the Convention entered into force on the ninetieth day after the date of the deposit of the fiftieth instrument of ratification, which took place on 16 August 2017. The first Conference of the Parties to the Minamata Convention was held on 24 September 29, 2017 in Geneva.

The Minamata Convention on Mercury is a global treaty of United Nations Environment Programme (UNEP) to protect human health and the environment from the adverse effects of mercury. The Parties to the Convention recognised that mercury is a chemical of global concern owing to its long-range atmospheric transport, its persistence in the environment once anthropogenically introduced, its ability to bioaccumulate in ecosystems and its significant negative effects on human health and the environment.

2 Reporting obligation

The Convention imposes a number of obligations and tasks on the Parties to the Convention, including, under Article 21, reporting obligations that involve inventory of stocks, installations, emissions and releases [3]. Each Party to the Convention shall submit reports on the measures it has taken to implement the provisions of the Convention and the effectiveness of such measures and potential challenges in meeting its obligations under the Convention. These reports are to be submitted to the Conference of the Parties through the Convention Secretariat.

In accordance with Article 21 of the Convention, each Party shall include in its reporting the information as called for in Articles 3, 5, 7, 8 and 9 of the Convention. These articles concern the following:

- Article 3 - mercury supply sources and trade,
- Article 5 - manufacturing processes in which mercury or mercury compounds are used,
- Article 7 - artisanal and small-scale gold mining,
- Article 8 - emissions of mercury or mercury compounds to the atmosphere,
- Article 9 - releases of mercury or mercury compounds to land or water.

The reporting obligations of the countries on mercury supply sources and trade cover the following issues:

- it should be identified individual stocks of mercury or mercury compounds exceeding 50 metric tons, as well as sources of mercury supply generating stocks exceeding 10 metric tons per year, that are located within territory of the country,
- it should be collected information related to the principles concerning of mainly importing, exporting, producing and trading mercury resources, which will confirm the fulfillment of the requirements for mercury supply sources and mercury trade,
- take measures to ensure that, where the Party determines that excess mercury from the decommissioning of chlor-alkali facilities is available, such mercury is disposed of in accordance with the guidelines for environmentally sound management, using operations that do not lead to recovery, recycling, reclamation, direct re-use or alternative uses.

For the purposes of Article 3 of the Convention, mercury is defined as “mercury” include mixtures of mercury with other substances, including alloys of mercury, with a mercury concentration of at least 95 per cent by weight while mercury compounds means mercury (I) chloride (known also as calomel), mercury (II) oxide, mercury (II) sulphate, mercury (II) nitrate, cinnabar and mercury sulphide. Article 3 also specifies that the provisions on sources of mercury supply and trade shall not apply to:

- quantities of mercury or mercury compounds to be used for laboratory-scale research or as a reference standard, or

- naturally occurring trace quantities of mercury or mercury compounds present in such products as non-mercury metals, ores, or mineral products, including coal, or products derived from these materials, and unintentional trace quantities in chemical products, or
- mercury-added products.

Within manufacturing processes in which mercury or mercury compounds are used, according to the provisions of the Convention, should be included chlor-alkali production, acetaldehyde production in which mercury or mercury compounds are used as a catalyst, vinyl chloride monomer production, production of sodium or potassium methylate or ethylate and production of polyurethane using mercury containing catalysts. In relation to these processes:

- it should be identified facilities within its territory that use mercury or mercury compounds for manufacturing processes and submit to the Secretariat, no later than three years after the date of entry into force of the Convention, information on the number and types of such facilities and the estimated annual amount of mercury or mercury compounds used in those facilities,
- it should be collected information on taking measures to address emissions and releases of mercury or mercury compounds from facilities in which mercury or mercury compounds are used in manufacturing processes,
- it should be collected information confirming the withdrawal chlor-alkali production and acetaldehyde production in which mercury or mercury compounds are used as a catalyst according to the presented timetable - respectively the phase-out date 2025 and 2018,
- it should be collected the quantitative data demonstrating the fulfilment of the requirements for mercury use and/or its emissions and releases from the vinyl chloride monomer production, production of sodium or potassium methylate or ethylate and production of polyurethane using mercury containing catalysts.

In the case of vinyl chloride monomer production the requirements mentioned above are to reduce the use of mercury in terms of per unit production by 50 per cent by the year 2020 against 2010 use, in the case of production of sodium or potassium methylate or ethylate the requirements mentioned above are:

- to reduce the use of mercury aiming at the phase out of this use as fast as possible and within 10 years of the entry into force of the Convention,
 - to reduce emissions and releases in terms of per unit production by 50 per cent by 2020 compared to 2010,
 - to prohibit the use of fresh mercury from primary mining,
- as well as in the case of polyurethane production using mercury containing catalysts – to reduce the use of mercury, aiming at the phase out of this use as fast as possible, within 10 years of the entry into force of the Convention.

The reporting obligation may also apply to countries where artisanal and small-scale gold mining is used and where there is used processing in which mercury amalgamation is used to extract gold from ore. The Convention specifies that if at any time the Party determines that artisanal and small-scale gold mining and processing in its territory is more than insignificant then develops and implements a national action plan and submits it to the Secretariat no later than three years after entry into force of the Convention and thereafter, provides a review every three years of the progress made in meeting the obligations and includes such reviews in its reports. It should be assumed that the reporting obligation resulting from the artisanal and small-scale gold mining and processing will not be concern to Poland.

The Convention also imposes a reporting obligation in respect to the point sources of mercury and mercury compounds emissions into the atmosphere. These sources include the following categories: coal-fired power plants, coal-fired industrial boilers, smelting and roasting processes used in the production of lead, zinc, copper and industrial gold, waste

incineration facilities and cement clinker production facilities. In relation to these emission sources, the Convention imposes the following requirements on countries – the Parties to the Convention:

- it should be established, as soon as practicable and no later than five years after the date of entry into force of the Convention, and maintain thereafter, an inventory of emissions from relevant sources,
- it should be defined which sources will be considered in the country as "relevant" within each source category. Party may establish criteria to identify the sources covered within a source category so long as those criteria for any category include at least 75 per cent of the emissions from that category,
- it should be collected and reported information confirming that action is taken to control emissions of mercury and its compounds from relevant sources,
- it should be collected and reported information confirming that other provisions of the Convention relating to point sources of mercury emissions to the atmosphere are being implemented, and in particular that:
 - for new sources, each Party is required the use of best available techniques and best environmental practices to control and, where feasible, reduce emissions, as soon as practicable but no later than five years after the date of entry into force of the Convention. Each Party may use emission limit values that are consistent with the application of best available techniques,
 - for existing sources, each Party, taking into account its national circumstances, and the economic and technical feasibility and affordability of the measures, should implement as soon as practicable but no more than ten years after the date of entry into force of the Convention, one or more of the following measures: a quantified goal for controlling and, where feasible, reducing emissions from relevant sources, emission limit values for controlling and, where feasible, reducing emissions from relevant sources, the use of best available techniques and best environmental practices to control emissions from relevant sources,, a multi-pollutant control strategy that would deliver co-benefits for control of mercury emissions or alternative measures to reduce emissions from relevant sources. A national plan setting out the measures to be taken to control emissions and its expected targets, goals and outcomes may also be prepared. Then the plan should be submitted to the Conference of the Parties within four years of the date of entry into force of the Convention.
 - reasonable progress must be made in reducing emissions over time by means of measures, wherein Parties may apply the same measures to all relevant existing sources or may adopt different measures in respect of different source categories.

Mercury releases to land and water from point sources located in territory of the country are also subject to reporting obligations. In relation to them:

- it should be demonstrated that there is controlling and, where feasible, reducing releases of mercury and mercury compounds, often expressed as "total mercury", to land and water from the relevant point sources not addressed in other provisions of the Convention,
- each Party should, no later than three years after the date of entry into force of the Convention and on a regular basis thereafter, identify the relevant point source categories, relating to the release of mercury and mercury compounds to the land and water from relevant point sources not addressed in other provisions of the Convention,
- each Party should establish, as soon as practicable and no later than five years after the date of entry into force of the Convention, and maintain thereafter, an inventory of releases from relevant sources,
- it should be collected and reported information confirming that other provisions of the Convention relating to releases, and in particular that:

- a Party with relevant sources should take measures to control releases of mercury and mercury compounds to land and water. A Party may also prepare a national plan setting out the measures to be taken to control releases and its expected targets, goals and outcomes. Then the plan should be submitted to the Conference of the Parties within four years of the date of entry into force of the Convention.
- the measures taken, in accordance with country needs should include one or more of the following, as appropriate: release limit values to control and, where feasible, reduce releases of mercury and mercury compounds to land and water from relevant sources, the use of best available techniques and best environmental practices to control releases from relevant sources, a multi-pollutant control strategy that would deliver co-benefits for control of mercury releases or alternative measures to reduce releases from relevant sources.

3 Sources of data existing in Poland

At present, the following sources of information and quantitative data necessary for the fulfillment of reporting obligations resulting from the provisions of the Minamata Convention on Mercury are existing and available in Poland:

- European Pollutant Release and Transfer Register (E-PRTR) [4], in the form of a public electronic database. Within the database there are only facilities that meet the criteria of the EC Regulation No. 166/2006 and are in excess of the relevant E-PRTR thresholds, mainly there are only the largest plants in the country. The database includes, among others, mercury and its compounds (as Hg). Pollutant releases on air, water and soil and off-site pollution transfers have been reported. For mercury, the threshold values for pollutant release were set at the following level: releases to air – 10 kg/year, releases to water – 1 kg/year, releases to land - 1 kg/year. Data is reported annually starting from 2007. The latest report from Poland includes data for 2015 and contains 48 facilities reporting mercury emissions to air (total emission of 5.46 tons), 29 facilities reporting mercury releases to water (total release of 440 kg), 0 facilities reporting mercury releases to land and 7 facilities reporting mercury transfer to waste water (total transfer of 898 kg).
- National Database on emissions, managed by National Centre for Emission Management (KOBiZE) [5]. The national database is an IT system containing a secure database that collects data on greenhouse gas emissions and other substances, including mercury. The database contains unique information about emission sources together with location of sources and parameters of operation of individual installations. The database provides accurate information based on actual data provided by the facilities as part of annual reporting. Data may be made available on the basis of a written request under the provisions governing access to environmental data.
- the so-called "fee databases" existing in the Marshal's Offices in the 16 respective voivodships. The databases were created under Article 275 of the Environmental Protection Law and serve to pay the fees for the use of the environment by the facilities that use it. The fee for using the environment is borne by, among others, for the emission of gases or particulates into the air and the release of sewage into the water or to the ground. Facilities, paying a fee also report the total amount of pollutant releases to the air, water or ground. Unfortunately, many facilities, due to the identical rate of fees, report only the total amount of heavy metals emitted into the air, than mercury alone. Data may be made available on the basis of a written request under the provisions governing access to environmental data.
- the national inventory of pollutant emission is prepared by the National Center for Emission Management (KOBiZE) for the purposes of national statistics, European Union requirements and commitments to international organizations within the European Union, Eurostat and the European Environment Agency (EEA) and the United Nations Convention

on Long-range Transboundary Air Pollution (LRTAP), United Nations Economic Commission for Europe (UN ECE) and the European EMEP Program. The countrywide inventory includes, among others. heavy metals, including mercury. The latest report includes data for 2014 and 2015 (the total national emission of mercury into the atmosphere were 9.6 tons and 10.6 tons respectively), the description of the methodology used for emissions balancing and analysis of key categories and emission trends from 1990 [6].

4 Summary

After analyzing the existing sources of information and resources of data on mercury, it should be stated that the current status of the availability of data and information needed to meet the reporting obligations of the Minamata Convention on Mercury should be assessed as insufficient. Practically there is no access to data on sources of mercury supply and mercury trade which is most often a trade secret of companies. On the other hand, data on other issues which should be reported are inconsistent and widely dispersed between the different registers and the different authorities. For this reason, further work is needed on the rearrangement of information and the creation of access to reliable data.

References

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