

Annex to the letter calling for submissions of available sources of information on the global levels of emissions and releases of mercury and mercury compounds from the open burning of waste

Summary of the current knowledge on the global levels of emissions and releases of mercury and mercury compounds from the open burning of waste

There is currently a lack of reliable information on the global levels of emissions and releases of mercury and mercury compounds from the open burning of waste. There are a number of studies that investigate the global emissions of polluting gases and particulate matter generated by the open burning of waste^{1,2}, while other studies, such as *Mercury Rising: Reducing Global Emissions from Burning Mercury-added Products*, contain data on the global mercury emissions from the burning of single waste streams³. However, the interim secretariat has been unable to find any academic or policy-related surveys or studies that directly address the issue of global emissions of mercury from the open burning of waste in general, or sources that contain measurements or estimates of such emissions.

Given the absence of surveys or studies that directly measure or estimate global emissions of mercury from the open burning of waste, an estimate of the global levels of emissions and releases of mercury and mercury compounds from the open burning of waste can be made using a mass balance calculation. Such a calculation would take into consideration the total mass of waste generated globally, the average mercury content of global waste, and the proportion of global waste that is subjected to open burning⁴. This summary will proceed to assess the availability of this information.

Total amount of waste generated globally

There are several studies that investigate the global generation of waste. Notable publications on this topic include the *Global Waste Management Outlook*⁵ and the *Solid Waste Management in the World's Cities*⁶. These publications contain estimates on waste generated on an annual basis. Moreover, the World Bank's report *What a waste: A Global Review of Solid Waste Management*, contains a comprehensive global overview of the availability of generation, collection, disposal and composition data on municipal solid waste.⁷

However, the quality of waste generation data varies between regions and countries. Eurostat has detailed annual data on the waste generated in the EU and some non-EU member states. The OECD has similar annual data available for the OECD countries as well as annual data for a limited number of non-OECD member states. While some data is available in developing countries, there is a general lack of reliable data for waste generation in developing countries. Moreover, the issue of solid waste data quality is discussed by the World Bank, which states that data quality is affected by a number of factors, including a lack of information on data collection methodologies, inconsistent definitions, false estimates, data incompleteness and data collected at non-representative moments.⁸

¹ Wiedinmyer et al., *Global emissions of trace gases, particulate matter, and hazardous air pollutants from open burning of domestic waste*, Environmental science and technology, August 2014

² International Solid Waste Association, *The Tragic Case of Dumpsites*, June 2015, p. 30

³ Zero Mercury Working Group/BAN Toxics!/Global Alliance for Incinerator Alternatives, *Mercury Rising: Reducing Global Emissions from Burning Mercury-added Products*, Mercury Policy Project, January 2009

⁴ The interim secretariat recognizes that this calculation represents a basic estimate of the global levels of mercury and mercury compound emissions and releases from the open burning of waste. An improved model would take into account the generation of waste, the mercury content of waste and the rate of open burning at a local level, as well as making a distinction between different waste streams.

⁵ UNEP, *Global Waste Management Outlook*, 2015

⁶ UN-HABITAT, *Solid Waste Management in the World's Cities*, 2010

⁷ Hoornweg et al., *What a waste: A Global Review of Solid Waste Management*, World Bank, 2012, p. 40

⁸ Ibid. p. 32

The average mercury content of global waste

Out of the three areas of knowledge considered in this summary, the content of mercury in global waste is the area where current knowledge appears to be the weakest. The *Global Mercury Assessment 2013* publication flags this as a major gap in knowledge, stating that industrial and hazardous waste incineration/disposal and sewage sludge incineration, are potentially important sources of emissions that are not quantified in the 2010 inventory⁹. While earlier versions of this publication contain quantitative information on emissions factors for municipal wastes and sewage sludges¹⁰, as well as global atmospheric releases of mercury emanating from waste disposal (information available by region)¹¹, it is noted that this information is not comparable to the data available in the 2013 assessment. The literature also contains studies investigating the environmental impact of waste and waste burning at the local level, including emissions from controlled fires in municipal solid waste bales and assessments of the health effects of landfill fires. However, there appears to be a dearth of reliable information on the mercury content of global waste.

The proportion of global waste that is subjected to open burning

Due to the informal and uncontrolled nature of the open burning of waste, reliable data on this issue is difficult to find, and no direct information on this phenomenon was found during the research for this summary. However, knowledge on the total amount of waste generated in a geographical area combined with the rate of collection and disposal may facilitate an estimation of the rate of informal disposal and open burning. In this regard, there are a number of sources that allow information on the open burning of waste to be inferred. The World Bank has published information on global waste collection rates¹², and similar annual data is available through a number of intergovernmental organizations, including UN Statistics, the OECD and Eurostat.

Considerations for the submissions of data

It is recognized that, in many cases, governments (local, provincial or national) will have limited information on the key areas required, namely the total amount of waste nationally, the amount of waste processed through open burning and the mercury content of waste. However, the submission of any available information would be appreciated, as it will assist in making at least a general estimation of the amount of mercury emitted through open burning.

⁹UNEP, *Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport*, 2013, p. 30.

¹⁰ UNEP, *The Global Atmospheric Mercury Assessment: Sources, Emissions and Transport*, United Nations Environment Programme, 2008, p. 16

¹¹ UNEP, *Global Mercury Assessment*, December 2002, p. 10.

¹² Hoornweg et al., *What a waste: A Global Review of Solid Waste Management*, World Bank, 2012, p. 12