

Minamata COP 2

Brief on Mercury Contaminated Sites

October 2018

Why are mercury contaminated sites a concern?

Mercury contaminated sites are recognised as a key source of mercury exposure for humans and cause major environmental impacts, polluting water sources, accumulating in the food chain and poisoning wildlife. The impacts of mercury contaminated sites are long lasting and the cost to clean them up is significant. There are thousands of contaminated sites across the globe caused by small-scale gold mining, industrial waste disposal, domestic waste dumping (including mercury-added products), cinnabar processing and manufacturing processes using mercury such as chlor-alkali plants. These sites are growing rapidly in number as small-scale gold miners move from location to location in search of new gold deposits, leaving behind mercury contaminated wastes. Soil and water pollution are key impacts, but atmospheric pollution from mercury volatilisation is also a growing issue.

Local mercury contamination = a global burden

The most obvious impacts of mercury contaminated sites are local, such as mercury intoxication of local communities or gold workers, and contamination of fish and waterways. However, the impacts can also be long range, as atmospheric currents carry mercury vapour around the globe, depositing in oceans and on land, leading to widespread diffuse contamination. Contamination is a problem for both developing and the wealthiest countries, as the pollution recognises no national or economic borders, but affects us all.

Some estimates suggest that there are more than 3000 mercury contaminated sites globally, causing localised contamination but also releasing an estimated 82 tonnes of mercury to the atmosphere. Another 116 tonnes are washed into waterways and surrounding landscapes by rainfall (Kocman et al 2013).

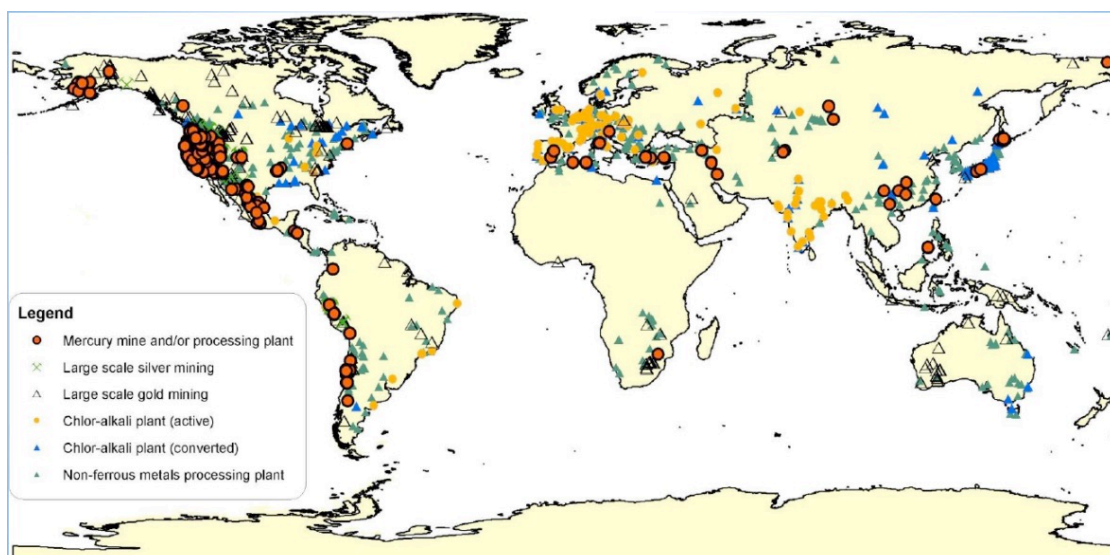


Figure 1. Global mercury contaminated sites 2013

Source Kocman et al 2013

Many developed countries have formalised frameworks for the identification and inventorying of contaminated sites; however, a lack of guidance, resources and capacity means that many developing countries have not had an opportunity to map the sites in their jurisdiction. It is likely that undertaking this exercise would reveal thousands of additional contaminated sites, particularly for the rapidly moving ASGM sector. Identifying these sites will help protect people and the environment from mercury exposure while increasing the accuracy of global estimates of atmospheric mercury contamination and improving effectiveness evaluation of the Mercury Treaty.

The urgent need for contaminated sites guidance

In a very direct sense many developing countries, including those hardest hit by ASGM activities, need immediate assistance, in the form of guidance, to permit them to identify and inventory sites in a cost-effective manner using environmentally sound management practices. This will allow them to prioritise areas for risk reduction, using limited resources to best address human health and environmental threats and contain contamination before it becomes widespread, thereby compounding future clean-up costs. The Mercury Treaty provides for the creation of such guidance in Article 12, which encourages the COP to develop and adopt guidance on identification and assessment of contaminated sites and risk reduction methods, including site management and remediation.

Specifically, the Treaty states at Article 12: paragraph 3;

The Conference of the Parties shall adopt guidance on managing contaminated sites that may include methods and approaches to:

- (a) Site identification and characterization;
- (b) Engaging the public;
- (c) Human health and environmental risk assessments;
- (d) Options for managing the risks posed by contaminated sites;
- (e) Evaluation of benefits and costs; and
- (f) Validation of outcomes.

Since INC 7, IPEN has been supporting the strong push by the Africa Region- backed by the Asia Pacific Region and many individual countries -to establish mercury contaminated sites guidance under the Treaty. In the absence of any Treaty guidance, IPEN developed an **independent guide to the identification, management and remediation of mercury contaminated sites**, focusing on how to identify sites economically (with cooperation from civil society), and how to manage them without causing additional environmental contamination or harming human health.

Despite repeated delays and obstruction by some Parties, COP 1 agreed to start the process of developing guidance. An expert group was formed, and, between COP 1 and COP2, the group has been developing a basic guidance document. Due to limited opportunities for the experts to consider and comment on the guidance, a draft decision (MC-



GUIDANCE ON THE IDENTIFICATION, MANAGEMENT AND REMEDIATION OF MERCURY-CONTAMINATED SITES



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2/[XX]) has been prepared by the secretariat for COP 2 to consider. The essence of the decision is to allow for another period of expert comment and review and to consider adoption of the guidance at COP 3.

The guidance must be strengthened, and synergies considered

While IPEN has been closely involved in the guidance development process and strengthening its outcomes, the guidance still lacks the detail required to be an effective tool for many countries struggling to identify contaminated sites. Key issues that must be resolved are the exclusion of incineration and landfill as options to manage mercury contaminated sites. Only environmentally sound remediation practices that do no harm to communities around contaminated sites or waste treatment facilities handling contaminated soils and tailings should be considered. Technologies are readily available to protect communities close to site remediation activities from contaminated fumes and dust and they should be employed wherever possible to prevent human exposure.

A second expert group has been concurrently developing *mercury waste definitions* to determine what will be regarded as 'mercury waste' by the Treaty and therefore what type of management arrangement will apply to such classified waste under the Treaty provisions. In developing such definitions, the COP should be aware of the synergies that apply between 'waste threshold definitions' and 'contaminated site definitions.' The category of waste that is likely to be the largest by volume is 'waste contaminated by mercury,' which may include soil, sludges tailings and other materials. It is important that the definition of a mercury contaminated site is harmonised with this waste threshold to avoid loopholes where waste removed from mercury contaminated sites avoids environmentally sound management as mercury waste. For example, if 'waste contaminated by mercury' is defined as a material with a concentration of >10 ppm mercury, but a site is regarded as contaminated at >1 ppm, then contaminated soil up to 10 ppm that is removed from the site may not be defined as 'mercury waste.' This could lead to thousands of tonnes of material escaping environmentally sound management.

Mercury recovered from contaminated sites should be retired- not sold

Environmentally sound treatment of mercury wastes, including soils, rubble and sludges removed from contaminated sites, often involves a technique such as vacuum distillation, which leaves the soil suitable for reuse while removing virtually all of the mercury. The mercury distilled from the waste is packaged, but the fate of this recovered mercury requires special attention. Currently it is possible that this mercury can be sold as a commodity on the open market. Ironically, this can lead to its use in ASGM activity, effectively creating new contaminated sites from the mercury recovered from other contaminated sites. Guidance developed for the Convention should stipulate that this mercury is retired from the market and stored permanently in a form that makes it difficult to commercialise at a later date.

Secure long-term storage, appropriate regulations and enforcement are part of the package necessary to retire mercury from the market. However, transforming mercury into a non-commercial material is an extra measure to ensure its long-term removal from supply and trade. Various methods of stabilisation are available to convert mercury into less commercially viable forms. One effective method is sulphide stabilisation, where mercury and sulphur are mixed at elevated temperatures in a closed vessel to prevent vapor release. The resulting mercury sulphide is stable and unusable as elemental mercury. Other emerging techniques such as polymerisation

of mercury using substances such as sulfur-limonene take the process a step further, creating a compound that is almost impossible to transform back into mercury.

Key issues on contaminated sites for COP 2

- The contaminated sites guidance must be strengthened, with incineration and landfilling of mercury waste from contaminated sites banned before adoption at COP 3.
- Land with mercury concentrations above 1 ppm should be considered contaminated and unsuitable for residential use unless remediated.
- Waste threshold definitions being considered by the mercury waste expert group should be harmonised with the contaminated sites definition, meaning that any waste contaminated with mercury above 1ppm should be deemed mercury waste.
- Mercury recovered from contaminated sites should not be permitted to be sold on the international market where it may create new contaminated sites through activities like ASGM. It should be labelled according to its source and should be retired permanently.
- Ecologically sustainable remediation techniques should be applied to ensure the remediated land is suitable for sensitive uses such as food production, residential living and biodiversity protection.
- Environmentally sound management techniques for mercury contaminated sites should ensure that no harm is done to communities on or around the sites through poor control of dust, fumes and mercury wastes.
- Technology transfer mechanisms to allow the transfer of environmentally sound remediation technology and training opportunities should be expedited to manage immediate threats from mercury contaminated sites in developing countries. This should include mobile and modular remediation technology and treatment techniques to retire mercury from the supply chain.
- Special guidance should be developed for the remediation of sites contaminated by ASGM activities within communities, which are more sensitive than industrial sites. These are locations where people live, raise children, produce food and breed animals, therefore special attention must be paid to remediation practices. Residents may not be easily able to relocate away from an impacted area that is also their home, which makes remediation much more complex. Where possible, remediation should be conducted in-situ using techniques that do not increase the exposure of residents to mercury vapor or dust.

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Ref: Kocman D, Horvat M, Pirrone N, Cinnirella S. Contribution of contaminated sites to the global mercury budget. Environ Res. 2013 Aug;125:160-70. Epub 2013 Mar 13