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MINAMATA CONVENTION COP 1

BRIEF ON ARTICLE 3 MERCURY SUPPLY SOURCES AND TRADE

All products or processes that contain or use mercury or mercury compounds are dependent on access to a supply of elemental mercury. Global mercury ore deposits that are most accessible for mining are located in areas of orogenic or volcanic activity, stretching from Spain to the Himalayas and surrounding the Pacific Basin. The estimated global reserves of mercury ore deposits in 2007 were 46,000 tons (UNEP, 2013).

Cinnabar is the most common source of mercury in nature and has been mined for thousands of years. During the Roman Empire it was mined both as a pigment, and for its mercury content.

To produce liquid (elemental) mercury, crushed cinnabar ore is roasted in rotary furnaces. In this process, pure mercury separates from sulphur and evaporates. A condensing column is used to collect the liquid metal and then it is shipped in iron flasks.

Despite a decline in global mercury consumption, supply from competing sources and low prices, production of mercury from primary mining is still

Figure 1. Cinnabar from Tongren Mine, Guizhou Province, China. *Photo: Minfind 2017*

Figure 2. Cinnabar from El Entricho Mine, Almaden, Spain. *Photo: Minfind 2017*

occurring in a number of countries. Studies identified several small-scale and artisanal mining of mercury in China, Russia (Siberia), Outer Mongolia, Peru, Mexico and recently, Indonesia (Camacho, et al. 2016; George, 2017; BaliFokus, 2017). It is likely that this mercury production is a response to the increased demand for mercury for artisanal and small-scale gold mining (ASGM) either legally or illegally.

Mercury in the environment that was absorbed by ancient plants may be present in fossil fuels like coal, oil and natural gas. At present, the world market is supplied by mercury that is:

- newly extracted from primary mercury mining sites;
- recovered as a by-product of the mining activities or refining of other metals, minerals, natural gas and old mining waste;
- recycled from spent products and waste from industrial processes;
- held in government reserve stocks; and
- held in private stocks, such as in chlor-alkali and other industries.

Currently, there is no detailed information available about the artisanal mining of mercury in several countries.

TO ACHIEVE THE 2020 SUNSET DATES FOR ELIMINATION OF MERCURY-ADDED PRODUCTS AND PROCESSES, THERE IS AN URGENT NEED TO REDUCE MERCURY SUPPLY AND PROMOTE SAFER ALTERNATIVES.

Since 2012, soon after the EU and USA enacted mercury export bans, data shows the declining trade values of mercury (as HS 280540) from USD 232 million (2012) to USD 45.3 million (2015). In 2012, although not a major consumer of mercury but rather a transport hub and distribution centre, Singapore was the top importer. However, the situation shifted in 2015 and 2016, and India was recorded as the top importer.

As the mercury export bans in the EU and USA are enforced, as of August 2017, the top 5 major exporters of mercury in 2016 were Indonesia, Mexico, Singapore, Japan, and India. The top 5 importers of mercury in 2016 were India, Colombia, Singapore, China, Hong Kong SAR, and the Netherlands.

In Indonesia, since 2012, the production of mercury from small-scale and illegal cinnabar mining has spread out in several remote areas. The cost of locally-produced mercury per kg is about a quarter of the imported mercury and is sold widely in many ASGM hotspots.

Besides direct selling, delivery services, and online trading platforms transactions, mercury sales and marketing are also conducted widely using popular social-media platforms such as Facebook, Twitter, and Instagram. As a result of the skyrocketing mercury

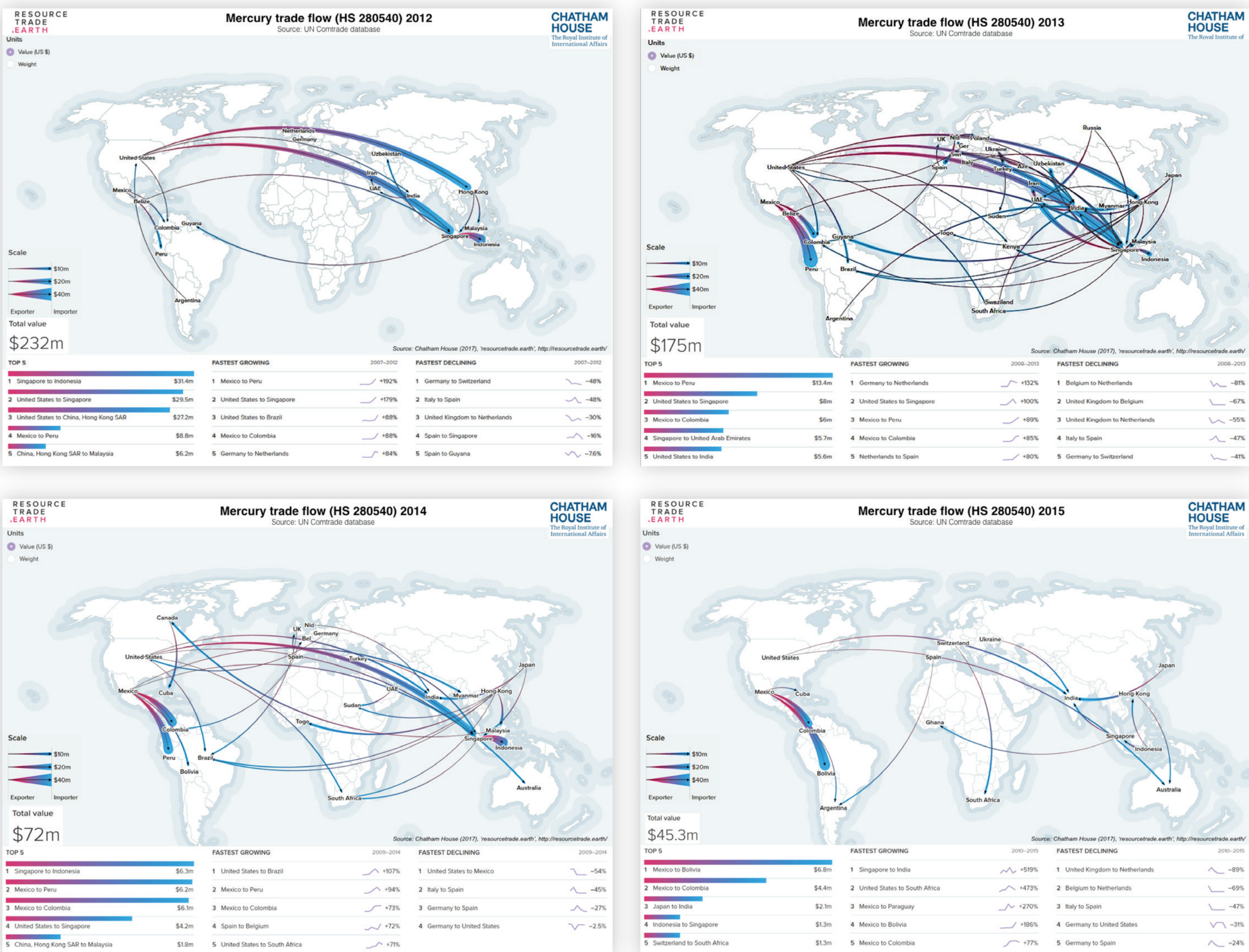

Figure 3. Global mercury trade flow 2012-2015. *Source: Chatham House, UK*

TABLE 1. TOP 5 EXPORTERS OF MERCURY IN 2016 (HS 280540)

		Export			Import			
No.	Reporter	Net weight (ton)	Trade value (mio USD)	Destination country	Reporters	Net weight (ton)	Trade value (mio USD)	Trade partners
1	Indonesia	680.44	4.11	China, Hong Kong SAR, Colombia, India, Japan*, Pakistan, Panama, Papua New Guinea, Singapore, South Africa, Thailand, United Arab Emirates, Viet Nam	India	349.03	8.17	China, France, Germany, Hong Kong SAR, Indonesia, Italy, Japan, Singapore, Switzerland, Tajikistan, Thailand, UK, USA
2	Mexico	266.70	9.65	Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Cuba, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Spain	Colombia	118.81	4.14	India, Indonesia, Japan, Mexico, Singapore, Spain
3	Singapore	231.57	5.76	Brazil, Canada, Colombia, Egypt, India, Indonesia, Kenya, Mexico, Morocco, Papua New Guinea, Rep. of Korea, South Africa, Togo	Singapore	103.93	2.28	Belgium, Indonesia, Japan, Rep. of Korea, Switzerland, Thailand, United Kingdom
4	Japan	146.77	3.61	Brazil, Myanmar, Colombia, Rep. of Korea, Other Asia, nes, Pakistan, Peru, India, Singapore, Viet Nam, Egypt	China, Hong Kong SAR	55.08	0.36	China, Indonesia, Malaysia, Singapore, USA
5	India	47.97	1.63	Bangladesh, Bolivia (Plurinational State of), Brazil, Myanmar, Sri Lanka, Chile, China, Colombia, Cuba, France, Ghana, Guyana, Italy, Kenya, Kuwait, Morocco, Singapore, Spain, Togo, Turkey, Yemen, Areas, nes	Netherlands	38.54	0.21	Belgium, Germany, Sweden

** Mercury exported to Japan, 368 tons, needs to be clarified.*

Source: UN Comtrade database, August 2017

production, in 2016 Indonesia became the top exporter of mercury with an annual production capacity of at least 3000 metric tonnes.

SINCE ASGM IS AN ALLOWED USE UNDER THE TREATY, TRADE OF MERCURY FOR ASGM IS ALLOWED. HOWEVER, COUNTRIES THAT HAVE ALREADY PROHIBITED THE USE OF MERCURY IN MINING AND ASGM SHOULD STRENGTHEN THEIR COMMITMENT TO PROHIBITING THE TRADE OF MERCURY TO BE USED IN THE ASGM SECTOR.

The Mercury Treaty provisions under Article 3 contain a “prior informed consent” procedure for mercury trade that requires the importing country to provide the exporting party with its written consent to the import and then to ensure that the mercury is only used for the allowed uses under the treaty or for interim storage. The treaty also states that a public register maintained by the Secretariat will contain consent notifications. Furthermore, exporters of mercury have to certify that it is not from prohibited sources or from illegal sites.

PRIMARY MERCURY MINING SHOULD BE CONSIDERED TO BE LISTED UNDER THE FUTURE MERCURY-CONTAMINATED SITE DEFINITIONS. REHABILITATION, REMEDIATION, AND LONG-TERM MONITORING PLANS SHOULD BE CONSIDERED.

Van Brussel, et.al. (2016) states that, although at a global level, the emission of mercury from mercury mining is 70 times lower than that from the ASGM sector, at the local and regional level, mercury primary mining is an important source of emissions and releases.

Due to the rudimentary techniques used in mercury distillation processes in residential areas, dust and soil samples taken from mercury processing sites in Mexico and Indonesia showed high concentrations above the safe level (Van Brussel, 2016; MoEF Indonesia, 2016). Cumulative exposure has also been confirmed as miners and the general population are being exposed to other metals that are present in the mineral itself, such as arsenic, and manganese.

Furthermore, a general exposure to Polycyclic Aromatic Hydrocarbons (PAHs) and hexachlorobenzene from wood burning to feed furnaces and indoor air pollution are common exposure routes. Van Brussel et.al. (2016) also found high urinary mercury levels above normal levels in children and among the mercury distilleries' workers.

Sites that have been used for primary mercury mining and their processing facilities, whether large scale or small informal operations, should be remediated to the extent that surface areas around the mine no longer pose a threat to human health, surface waterways or the local environment and biota.

It should be acknowledged that soil profiles at these sites may contain naturally elevated mercury levels and any remediation plan should take this into consideration in terms of final clean up levels.

PRIMARY MERCURY MINING SITES SHOULD BE CLOSED AND MEASURES SHOULD BE TAKEN TO PREVENT THEM FROM RE-OPENING.

Recently, mercury contamination from old mercury primary mining sites in Palawan, the Philippines came under the spotlight. After 18 years of production between 1955 until 1976, and mercury exports to Japan, the factory and the mining sites closed down. About 38% of the sampling population around the old mining site (which has now turned into a lake) reportedly suffered from chronic mercury poisoning (Mantubig and Requimin, 2017).

Studies show a similar situation in primary mercury mining sites in China and the former mercury mining site New Almaden in California (Feng, 2005; Qiu, et.al., 2016; Micheal, 2017). Countries with primary mercury mining should consider a serious inventory and action plan to remediate the sites and implement long-term monitoring plans. The Mercury Treaty does contain provisions that allow Parties to restrict such mining but also provides for exemptions and exclusions.

For large scale mines, structural stability should be assessed to determine if surface-contaminated tailings materials can be packaged and stored permanently within the mine. Both large scale and informal mines should be sealed to prevent further mining activity following remediation.

Remediation plans should also consider any mercury ore processing operations associated with the mine site even if these are not located on-site, as they will be likely to have contaminated areas where they have been located.

Specifically, the Treaty notes in Article 3:

- New primary mining is banned as of the entry into force by a government. However, a government may permit new mercury mines before then and if a government postpones ratification, then it has a longer window of time for developing new mines.
- Pre-existing primary mercury mining is banned after 15 years as of date of entry into force for a government. If a government postpones ratification, then it can mine mercury from pre-existing mines for a longer period.
- Mercury from primary mining after ratification can only be used for making permitted products or used in permitted processes (such as vinyl chloride monomer, etc., described in Articles 4 and 5), or disposed according to Treaty requirements. This implies that mercury from primary mining shall not be available for use in ASGM once a country ratifies the treaty.
- Countries are required to "take measures" to ensure that when a chlor-alkali plant closes, the excess mercury is disposed of according to Treaty requirements and not subject to recovery, recycling, reclamation, direct re-use, or alternative uses. The measures should prevent the recovered mercury from re-entering the market. However, good mechanisms are still needed to ensure the measures are implemented and enforced.

KEY ISSUES ON TRADE AND SUPPLY, AS THEY RELATE TO CONTAMINATED SITES, THAT NEED TO BE CONSIDERED AT COP 1 INCLUDE:

- Prevention of mercury recovered from contaminated sites in one location or country being permitted to re-enter the mercury trade and supply chain where it may be used for ASGM, creating new contaminated sites in another location or country.
- The extent to which remediation of primary mercury mining sites is possible following their closure. Given that they occur in areas of elevated natural mercury levels, specific guidance should be developed as to how the mine can be closed and contained. In addition, the land surface and waterways in proximity to the mine must be protected from legacy mining wastes (tailings, waste ponds), leachate and associated impacts.

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For more details, contact:

IPEN mercury Policy Adviser, Lee Bell,
leebell@ipen.org

IPEN lead for ASGM/Mining, Yuyun Ismawati,
yuyun@balifokus.asia

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