National ASGM Status Report (Uganda) March 2025

Children collecting water for domestic use from open surface water well in the middle of a mining site in Kayonza gold mining site, Mubende

BY ACTION COALITION ON CLIMATE CHANGE, (ACCC) WITH SUPPORT FROM IPEN

Executive Summary

This is a summary report on the status of Artisanal and Small-Scale Gold Mining (ASGM) and mercury trade, use, and environmental and human health impacts in Uganda.

Artisanal mining accounts for over 90 percent of Uganda's gold production, producing more than 7,081 kg annually. This sector employs over 31,000 people, making it the largest employer of gold miners in the country. The main artisanal mining districts include Karamoja (Amudat & Moroto), Mubende, Kasanda, Busia and Buhweju.

The 2019 National Baseline Overview Study conducted by NEMA found that 73% of the annual gold production from artisanal and small-scale mining is processed using mercury and that Uganda's ASGM sector uses over 1.5 tons of mercury annually. Mercury is a highly toxic heavy metal, which poses a global threat to human health and the environment. Together with its various compounds, it has a range of severe health impacts, including damages to the central nervous system, thyroid, kidneys, lungs, immune system, eyes, gums and skin.

The global realization of adverse effects of mercury on human life and the environment gave birth to the Minamata Convention (2013) and subsequent ones like Bali Declaration (2021 Minamata COP) in Indonesia was re-echoing the continued trade and use of mercury in small scale artisan mining which had increased in the previous decade despite the well-known mercury threat.

Trade in mercury both international and local continues to exist despite efforts to ban its trade and use. The total reported trade volume from 2018 to 2020 (Kishor Parajuli and Peter Maxson 2023) ranged between 500 to 900 metric tons, indicating a declining trend in reported trade from 2015. This has however increased during the period 2020-2023 to between 1,056 to 1,832 metric tons (UN Comtrade data). Mercury enters Uganda through various pathways:

i) Importation: for use by various industries such as artisan and small-scale gold mining (ASGM), thermometer and fluorescent light manufacturing, dental and medical applications
ii) Informal trade: Often smuggled into the country through informal channels including border crossing especially from Democratic Republic of the Congo (DRC) and South Sudan.
iii) Contaminated products: Mercury also enters Uganda through contaminated products like used fluorescent light bulbs, thermometers and scrap materials like fridges.

Following on international efforts to restrict the trade and use of mercury, the government of Uganda has put in place regulations to restrict the use and movement mercury.

The use of mercury in mining is prohibited under Uganda's Mining and Minerals (Licensing) Regulation 2023, Section 255 (as the main regulation). Others are Guidelines for the Management of Landfills in Uganda (NEMA, December 2020), The National Environment

(Standards for Discharge of Effluent into Water or Land Regulations, S.I. No. 144/2020, The National Environment (Management of Hazardous Chemicals and Products Containing Hazardous Chemicals) Regulations of June 2022 among others. These are guided by the National Action Plan for Artisanal and Small-Scale Gold Mining in Uganda, in accordance with the Minamata Convention on Mercury (2019).

However, beyond these regulations the government of Uganda has not come up with elaborate control guidelines on who imports Mercury, such as registration of their details and volumes imported and final destination of the imported mercury. As such it likely that imported mercury can find its way straight to ASGM.

The recommendations made here below are meant to achieve two objectives, ***End the global mercury trade***, and ***End mercury use in ASGM by 2032:***

i) Mercury trade is addressed primarily under Article 3 of the Minamata Convention. Paragraphs 6 and 8 provide that Parties shall not allow the export or import of mercury, respectively, unless under specific conditions. Uganda and similar countries which are signatories to the convention to operationalize these paragraphs by specifying conditions under which mercury can be imported or to avoid continued use while hiding under the "specific conditions" phrase.

ii) The in-country focal point persons need to have mechanisms that encourage stakeholders (mercury users across the chain) to promote collaboration between ministries and agencies within their country, so that more accurate country -specific data about the magnitude of Mercury import, use, export, use in mining can be generated to inform decision making.

iii) Lack of awareness and skills about the use of other methods other than Mercury. Mercury-free gold mining is a safer, more sustainable, and more efficient way to extract gold. While there are challenges and limitations, the benefits of mercury-free gold mining make it an attractive alternative to traditional mercury-based methods.

iv) Government can make mercury difficult to access through tougher restrictions including high taxes to make it non-profitable for use in gold mining, criminal prosecution for trading/smuggling mercury and some minor sanctions for mercury possession.

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1. Introduction

The Minamata Convention on Mercury adopted in 2013 and entered into force August 2017 is the first global Convention on environment and health adopted for close to a decade. It is named after the place where thousands of people were poisoned by mercury tainted industrial wastewater in the mid-20th century in Japan, leading to crippling symptoms that became known as the Minamata disease.

Mercury is a highly toxic heavy metal, which poses a global threat to human health and the environment. Together with its various compounds, it has a range of severe health impacts, including damages to the central nervous system, thyroid, kidneys, lungs, immune system, eyes, gums and skin. Victims may suffer memory loss or language impairment, and the damage to the brain cannot be reversed. There is no known safe exposure level for elemental mercury in humans, and effects can be seen even at very low levels. Foetuses, newborn babies and children are amongst the most vulnerable and sensitive to the adverse effects of mercury

Mercury is transported around the globe through the environment, so emissions and releases of mercury can affect human health and environment even in remote locations. No country can control trans-boundary effects of mercury alone.

2. National Regulatory Framework related to mercury and ASGM

The use of mercury in mining is prohibited under Uganda's Mining and Minerals (Licensing) Regulation 2023, Section 255 (as the main regulation). Since March 2023, the government, with support from Planet Gold, has conducted nationwide sensitization efforts on mercury regulation to promote safer, cleaner, and more profitable mining practices, to avoid use of mercury.

i) **Guidelines for the Management of Landfills in Uganda (NEMA, December 2020).**
These guidelines among others cover environmental monitoring of a Landfill where mercury is regarded as one of the Leachate components. Groundwater monitoring and parameters for analysis for groundwater monitoring includes mercury in mg/l requiring no levels indicated and be monitored on a quarterly basis 1.

[1] Mercury (Hg) levels of 0.01 mg/l as an indicator parameter for surface water monitoring on a Quarterly (4 times a year)

ii) **The National Environment (Standards for Discharge of Effluent into Water or Land Regulations, S.I. No. 144/2020,** which provides a maximum permissible limit for mercury in effluent discharged to the environment. The metals regulated include arsenic, beryllium, cadmium, chromium, gold, lead, mercury nickel, selenium, silver and vanadium. The regulations have two relevant schedules; Schedule 3—Standards for Inorganic Substances Effluent Discharge with Mercury having Maximum permissible Limit of 0.01 mg/L and Schedule 5 — Permit to Discharge Effluent into Water or Land

iii) **National Environment (Waste Management) Regulations, S.I. No. 49/2020,** provides for characterization of waste containing mercury or mercury compounds

iv) **The National Environment Act No.5 of 2019,** which requires that regulations and criteria is developed for the management of mercury or mercury compounds in manufacturing processes (s74 & 179).

v) **The National Environment (Management of Hazardous Chemicals and Products Containing Hazardous Chemicals) Regulations of June 2022**

These among others cover the management of mercury or mercury compounds, lead, cyanide, arsenic and polonium and products containing mercury, lead, cyanide, arsenic and polonium; and the management of transboundary movement of hazardous chemicals and products containing hazardous chemicals.

A person handling a product or article upon becoming waste, consisting of, containing or contaminated with a chemical regulated by these regulations, shall manage such waste in a manner protective of human health and the environment, and ensure that such waste shall not be subjected to disposal operations that may lead to recovery, recycling, reclamation, direct reuse or alternative uses of persistent organic pollutants, mercury or other chemical;

vi) The National Action Plan for Artisanal and Small-Scale Gold Mining in Uganda, in accordance with the Minamata Convention on Mercury (2019)

This NAP on ASGM among others gives background to the ASGM sector in Uganda national objectives and reduction targets; implementation strategy of the NAP on ASGM; preventing exposure of vulnerable populations, particularly children, women of childbearing age and nursing mothers from mercury used in ASGM.

3. Global Mercury import-export - UN Comtrade data

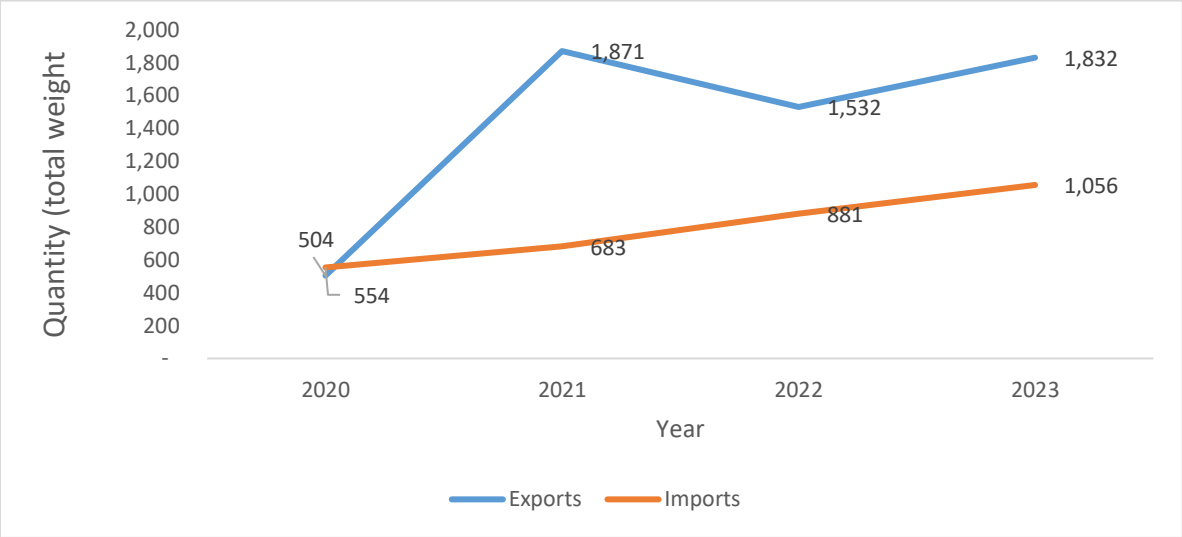

Figure 1: Exports and Imports of Mercury (net weight)

Notes: "import" is the sum of imports from the rest of the "world" as reported by the importing countries, whereas "export" is the sum of exports to the rest of the "world" as reported by the exporting countries. Figures rounded to the nearest metric ton.

Figure 1 provides a comparison with similar data for 2018-2020, revealing that the reported trade of elemental mercury has been declining since 2019, as global efforts following the adoption of the Minamata Convention in 2015.[2]

The total reported trade volume from 2018 to 2020 (Kishor Parajuli and Peter Maxson 2023) ranged between 500 to 900 metric tons, indicating a declining trend in reported trade from 2015. This has however increased during the period 2020-2023 to between 1,056 to 1,832 metric tons.

There are various factors that could contribute to an increase in mercury trade, such as:

- Growing demand for mercury is almost certainly driven by increases in gold price and demand[3]. The increasing global gold prices is temptation even to mercury security control enforcers to yield to bribery offers from traffickers.

[2] It is notable that the U.S. banned the export of elemental mercury from 1 January 2013

[3] https://jonathanbaird88-89120.medium.com/gold-prices-surge-the-real-driver-behind-the-surge-eaee70158dfe

- Changes in global supply chains: The COVID-19 pandemic and geopolitical tensions have led to shifts in global supply chains. This could result in changes to mercury trade patterns, potentially leading to an increase in trade.
- Lack of effective regulation: the Minamata Convention regulates Mercury trade, but the effectiveness of these regulations can vary by country. Weak enforcement or loopholes in regulations could contribute to an increase in mercury trade (UNCTAD, Global trade update 2023).

It's essential to note that the global trade of mercury is a complex issue, and these factors might not be the only ones influencing the increase in trade. More research and data would be necessary to fully understand the reasons behind the rise in mercury trade

It is also important to note that the data obtained from UN Comtrade may encompass both waste mercury intended for disposal and commercial mercury intended for further use. However, a breakdown of the data into these two categories is not available in UN Comtrade and can only be acquired directly from the countries that submit the information.

4. ASGM activity in Uganda

Artisanal mining accounts for over 90 percent of Uganda's gold production, producing more than 7,081 kg annually. This sector employs over 31,000 people, making it the largest employer of gold miners in the country[4] (Planet Gold Nov 2023).
Here's a summary of the gold mining districts in Uganda:

- Busia Greenstone Belt:

Located in eastern Uganda, this area is known for gold deposits.

- Mubende-Singo Goldfields:

Situated in the central region, these goldfields are also a significant source of gold.

- Karamoja Region:

In the northeast, Karamoja is another area known for gold mining activities.

[4] Htttps://www.planetgold.org

- Kigezi and Buhweju-Mashonga Goldfields:

Located in the southwest, these goldfields are also important for gold production.

- The Kitgum
  Area within the Aswa Shear zone in Northern Uganda, the Western Nile area.

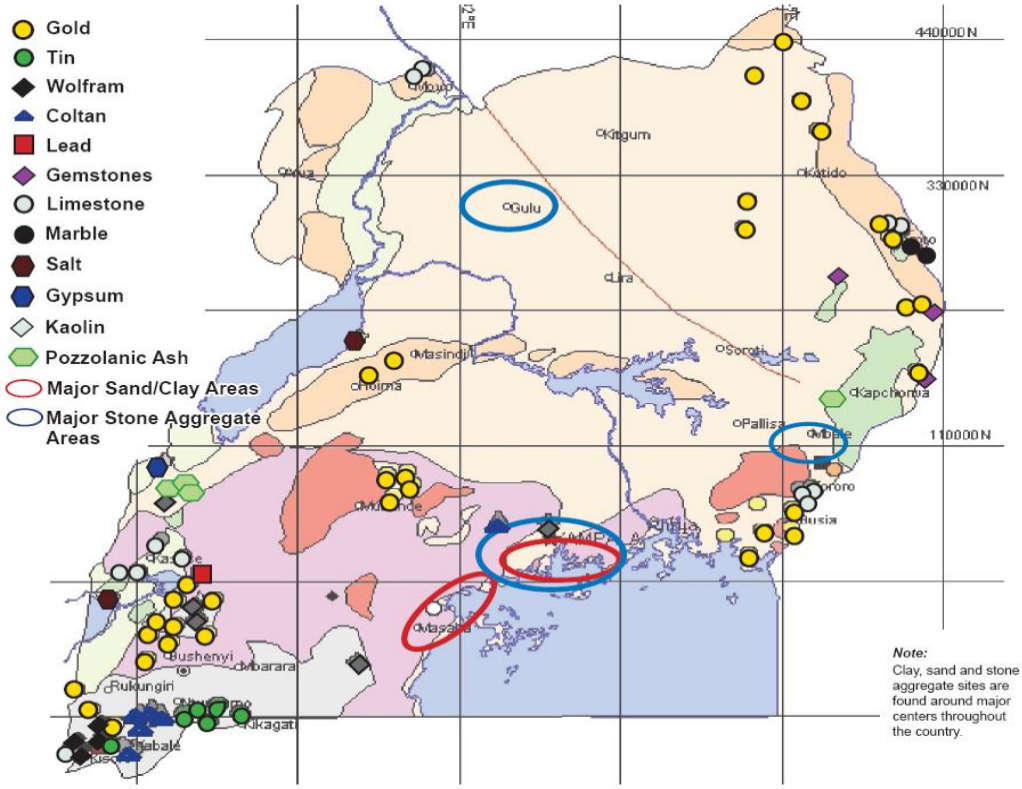

Figure 2: Artisan small miners' locations in Uganda (Emphasis Gold)

Source: Analysis of formalization approaches in the artisanal and small-scale gold mining sector based on experiences in Ecuador, Mongolia, Peru, Tanzania and Uganda - Case Study Report (2012).

4.1 Mercury use in Uganda

Information on the quantity of mercury used by the miners is important in understanding the extent of mercury use by the miners in gold mining sites. The study findings in Busia and Mubende (ACCC report 2018) indicate that the majority (58%) of the sampled artisanal gold miners use an average of 1–50gms of mercury per person/week. This translates into an estimated 2,800gms per miner/year. This finding is in line with that of COWI (2016), which observed that, although there are no recent estimates on the use of mercury for ASGM in

Uganda, if the average mercury consumption per miner from Busia and Mubende gold mining sites is applied, the resulting mercury consumption may be estimated at 33–48 tons/year. The finding is also in line with UNEP's (2012) finding, which indicates that an estimated 1400 tons of mercury are used every year by ASGM.

The 2019 National Baseline Overview Study conducted by NEMA found that 73% of the annual gold production from artisanal and small-scale mining is processed using mercury and that Uganda's ASGM sector uses over 1.5 tons of mercury annually yet only 178Kg is reported to have been formerly imported. This implies close to 1322 Kgs is either smuggled or illegally imported.

Data on mercury importation in Uganda is very scanty. It is, however, reported that Uganda's mercury import rose in 2023 reaching 178kgs5, though, with declining overall market with consumption dropping to UKP 15000 (1kg valued at £164.35)[6]. Mercury enters Uganda through various pathways:

iv) Importation: for use by various industries such as Artisan and small-scale Gold mining (ASGM), Thermometer and Fluorescent light manufacturing, dental and medical applications
v) Informal trade: Often smuggled into the country through informal channels including border crossing especially from Democratic republic of Congo (DRC) and South Sudan
vi) Contaminated products: Mercury also enters Uganda through contaminated products like used fluorescent light bulbs, thermometers and scrap materials like fridges
vii) It is likely that there could be online trade in mercury that enters the country, but with gaps in absence of elaborate likening of mercury importation, data about this is not available.

There is one main formal known mercury dealer, Silver and Red Mercury manufacture (Kampala Industrial area) but is unclear if they manufacture all their mercury or import some. Details of how much mercury is imported and its destination is not accurately known because beyond general regulations the government of Uganda has not come up with elaborate control guidelines on who imports Mercury, such as registration of their details and volumes imported and final destination of the imported mercury.

However, in view of the information obtained, mercury supply in artisanal mines in Mubende, Buhweju and Busia is comprised of:

- Foreign Traders of Indian and Chinese origin that bring in and sell mercury to other mercury traders.

[5] https://www.indexbox.io/store/uganda-mercury-market-analysis
[6] www.metalary.com

- Local Traders who sell mercury to the ASGMs. Most of the local traders are gold buyers who also engage in mercury supply to the ASGMs.
  Hospital and Laboratory officers who smuggle and illegally sell mercury meant for hospital and laboratory operations to middle men who then deliver it to the ASGMs.

The UN *Environment Programme (*UNEP) documented the use and challenges of mercury in ASGM) selected communities in Uganda[7]. Mercury use is common in districts like Buhweju, Amudat, Moroto, Busia, Namayingo, Kassanda, and Kisoro. In terms of sector contribution to GDP, Gold mining contributes only close to 5% as the Services sector continued to be the biggest contributor to GDP, with a share of 42.4 percent in 2022/23 compared to 41.7 percent in 2021/22.[8]

In a survey conducted by Action Coalition on climate change (ACCC) 2018, 100% of the miners interviewed were using mercury in the different stages of gold–processing/mining in both Mubende and Busia gold–mining sites. It was, further observed that none of the miners was using gloves during the process of gold amalgamation. Extracting minerals using mercury with bare hands is contrary to the UNIDO guidelines on mercury–use, which requires that gloves should always be worn to reduce exposure to mercury by the small–scale and artisanal mineral miners.

[7] **https://www.unep.org/globalmercurypartnership/resources/video/artisanal-and-small-scale-gold-mining-uganda**
[8] https://ugandaradionetwork.net/story/govt-pushes-mercury-free-solutions-for-artisanal-miners

Figure 3: ASGMs from one district in Uganda sorting gold from ore using mercury (ACCC Status & extent of mercury use Report 2018)

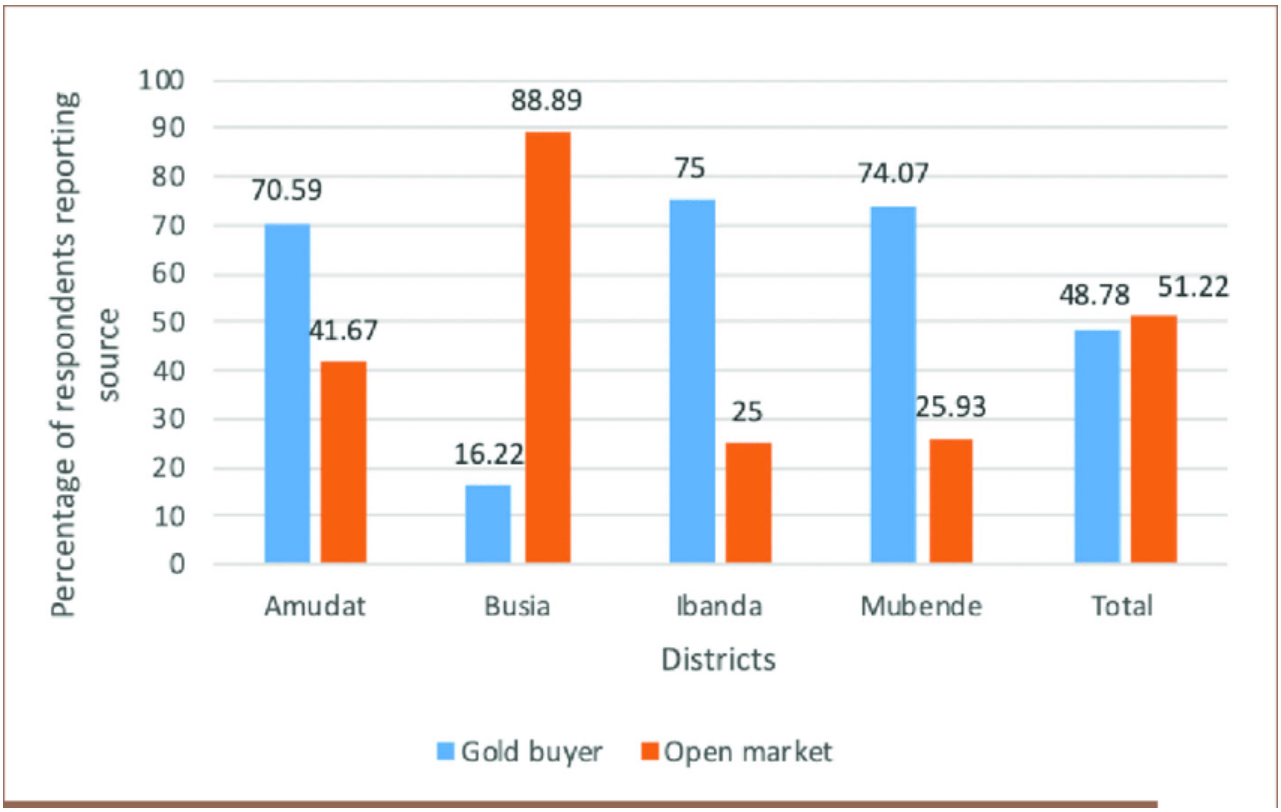

Figure 4: Sources of mercury per district[9]

Source: Mapping the Mercury Supply Chain for Artisanal and Small-Scale Gold Mining in East Africa - Centre for Environment Justice and Development (CEJAD 2020).

Reasons for continued use of mercury

- Lack of coordinated enforcement of available gazzeted national laws and regulations on Mercury Use
- Availability and affordability of Mercury: Mercury continues to be available and affordable compared to other extractive methods and technologies
- High Cost of other alternatives like electrolysis, bioleaching and Phyto-mining. Non-Mercury options methods and technologies include:

Non-Mercury Methods

[9] Mapping the Mercury Supply Chain for Artisanal and Small-Scale Gold Mining in East Africa - Centre for Environment Justice and Development (CEJAD 2020).

a) Gravity separation: Uses centrifuges, spirals, or shaking tables to separate gold from ore.
b) Flotation: Uses chemicals to attach gold particles to air bubbles, which are then skimmed off.
c) Cyanidation: Uses cyanide to dissolve gold, which is then recovered using activated carbon.
d) Borax method: Uses borax to reduce mercury emissions and improve gold recovery.

Mercury-Free Technologies

a) Gold Kacha: A centrifugal concentrator that uses a spinning bowl to separate gold from ore.
b) Blue Bowl: A centrifugal concentrator that uses a spinning bowl to separate gold from ore.
c) Shaking tables: Use gravity to separate gold from ore.
d) Crushers and grinding mills*: Use mechanical force to break down ore and release gold.

- Lack of awareness and skills about the use of other methods other than Mercury

Some of the community members collecting untreated waste water from Busia United Gold Mining site

5. The need to amend the convention to end mercury trade and introduce a 2032 phase-out date for mercury use in ASGM

The Bali Declaration (2021) (parties to Minamata convention) in Indonesia was re-echoing the continued trade and use of mercury in small scale artisan mining which had increased in the previous decade despite the well-known mercury threat to human health and environment.
The previous treaties however had weakness. The gold industry influence ensured that ASGMs using mercury was allowed to continue indefinitely as an 'allowed use.' The excuse made was that millions of miners needed mercury to survive. The second major weakness of the convention was to allow the ongoing global trade in mercury. The reasoning was that it was needed to supply products and processes requiring mercury until their phase out.

5.1 Effects of Mercury

A meta-analysis of global mercury exposure data from over 1,700 peer-reviewed studies revealed that harmful mercury levels frequently exceed safe thresholds in all biomes. The World Health Organization (WHO 2018) warned that mercury exposure can lead to skin, eye, and gastrointestinal damage, and prolonged exposure may cause neurological and behavioural disorders. Mercury is widely used in small-scale gold mining to separate gold from other minerals due to its ability to form an amalgam with gold. However, this process releases substantial amounts of mercury into the environment, contributing to 37% of global mercury emissions.

5.12 Dangers of Mercury to Human Health and Environment

Mercury exists in various forms: elemental (or metallic); inorganic (e.g. mercuric chloride); and organic (e.g. methyl- and ethylmercury), which all have different toxic effects, including on the nervous, digestive and immune systems, and on lungs, kidneys, skin and eyes. Mercury is toxic to human health, posing a particular threat to the development of the child in utero and early in life.

The health impacts of mercury are numerous including kidney and nervous system damage and skin problems. Exposure of the fetus to methylmercury poses danger to the unborn child.

The inorganic salts of mercury are corrosive to the skin, eyes and gastrointestinal tract, and may induce kidney toxicity if ingested.

Neurological and behavioural disorders may be observed after inhalation, ingestion or dermal exposure of different mercury compounds. Symptoms include tremors, insomnia, memory loss, neuromuscular effects, headaches and cognitive and motor dysfunction. Mild, subclinical signs of central nervous system toxicity can be seen in workers exposed to an elemental mercury level in the air of 20 µg/m3 or more for several years. Kidney effects have been reported, ranging from increased protein in the urine to kidney failure[10].

Artisanal and small-scale gold mining (ASCGM) provides a livelihood for many communities worldwide, but it has profound environmental impacts, especially on the quality of nearby water resources. A study conducted ((CEJAD) 2020), assessed the impacts of ASCGM on the physicochemical quality of water and sediments from Kitengure stream, Buhweju Plateau, Western Uganda. Surface water and superficial sediments were sampled from three different sections of Kitengure stream (upstream, midstream around the ASCGM area, and downstream). The samples were analysed for various physicochemical parameters and selected potentially toxic elements (PTXEs), namely: zinc (Zn), cadmium (Cd), lead (Pb), copper (Cu), and arsenic (As). A health risk assessment was also performed using the hazard index and incremental life cancer risk methods. Pearson's bivariate correlation, geo-accumulation, and pollution indices were used to establish the sources and potential risks that PTXEs in sediments could pose to aquatic organisms. The results indicated that water in Kitengure stream draining the ASCGM site was highly coloured, with 0.035mg/L exceeding the acceptable levels of 0.01 mg/L. This shows how mercury use contaminates water which neighbouring communities use for domestic purposes and poses a risk their health.

Current efforts towards curbing trade and use of mercury are directed towards three main actions:

- End the global trade in mercury. This can be done by requiring all parties to ‘not allow’ the export of mercury except for the purpose of special conditions that would be defined under national laws that do not violate the Minamata convention spirit. The EU and US already prohibit exports.
- Insert a phase out date of 2032 into the convention for the ‘allowed use’ of mercury in ASGM. This allows time for a transition and for National Action Plans to take effect. It also coincides with the global ban on primary mercury mining.

[10] https://www.who.int/news-room/fact-sheets/detail/mercury-and-health

- Partners at country level are engaged in sensitizing people on dangers of mercury use and urging governments to strengthen regulation of use of mercury especially in artisan and small gold miners.

6. Conclusion and recommendations

6.1 Conclusion

The analysis underpinning these findings recognized a number of positive trends and results, despite the remaining gaps in the understanding of mercury trade, supply and demand, which are noted in the following:

The trade of mercury that is considered illegal under national laws, particularly for the purpose of ASGM, remains a significant concern and has not been adequately quantified.

The information provided by countries including Uganda is not sufficient to support more precise global quantitative analyses of the trade, supply and demand of mercury. It needs concerted effort by all mercury users through the supply chain to report to relevant government agency of quantitative information related to trade, supply and demand would be useful as a means to fill the identified gaps.

The investment done in research on the environment effects of mercury use especially on contamination of water sources at community level is not sufficient in depth and accuracy to inform policy and programmatic decisions.

6.2 Recommendations

1. End the global mercury trade

- Mercury trade is addressed primarily under Article 3 of the Minamata Convention. Paragraphs 6 and 8 provide that Parties shall not allow the export or import of mercury, respectively, unless under specific conditions. Uganda and similar countries which are signatories to the convention to operationalise these paragraphs by specifying conditions under which mercury can be imported or to avoid continued use while hiding under the “specific conditions” phrase.
- The in-country focal point persons need to have mechanisms that encourage stakeholders (mercury users across the chain) to promote collaboration between ministries and agencies within their country, so that more accurate country -specific

data about the magnitude of Mercury import, use, export, use in mining can be generated to inform decision making.

2. End mercury use in ASGM by 2032.

- Lack of awareness and skills about the use of other methods other than Mercury. Mercury-free gold mining is a safer, more sustainable, and more efficient way to extract gold. While there are challenges and limitations, the benefits of mercury-free gold mining make it an attractive alternative to traditional mercury-based methods.
- Government can make mercury difficult to access through tougher restrictions including high taxes to make it non-profitable for use in gold mining, criminal prosecution for trading/smuggling mercury and some minor sanctions for mercury possession.

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