



The State of Mercury in São Tomé e Príncipe



The Minamata Convention on Mercury is a global agreement specifically designed to address contamination from a heavy metal. Opened for signature in October 10, 2013 and entered into force on August 16, 2017, the Convention seeks to address issues related to the use and release of mercury in trade and in industrial processes. The treaty also addresses major sources of atmospheric emissions and releases of mercury into the environment, as well as long-term storage and disposal of mercury and mercury compounds.

Under the Minamata Convention, individual countries are charged with protecting human health and the environment from the risks of mercury exposure by systematically controlling mercury emissions and releases, including phasing out the use of mercury in certain products and processes.

São Tomé e Príncipe did not originally sign the convention but took steps toward ratification by conducting a Minamata Initial Assessment (MIA). On December 7, 2017 the President of the Republic ratified the Minamata Convention on Mercury. The country must now deposit

the documents of ratification at the United Nations Headquarters. The primary activities of the MIA include:

- A review of the institutional and capacity needs for implementation of the Convention;
- An assessment of national regulations, policies and legislation to assist with preparations for compliance with the obligations of the Convention; and
- An identification of the primary sources of mercury emission and releases as part of a detailed National Mercury Profile.

The MIA was conducted with financial assistance from the Global Environment Facility and was implemented in collaboration with UNIDO and the Ministry of Public Works, Natural Resources, and the Environment, through the General Directorate of Environment, of São Tomé e Príncipe. This brochure summarizes the major findings of the MIA.



Findings from the Minamata Initial Assessment

What are the Sources of Mercury?

The origin of mercury can be natural (e.g., volcanoes) or anthropogenic (e.g., human-caused releases). The major source of mercury in São Tomé e Príncipe, based on the mercury inventory conducted for the MIA, is the use and disposal of mercury-added products, such as batteries, thermometers, and blood pressure gauges (920 kg Hg/yr)

As a result of the MIA process, the magnitude and source distribution of these anthropogenic releases into the air, water, and land are now quantified for São Tomé e Príncipe.

Based on the MIA findings, the use and disposal of mercury-added products is a major source of mercury releases into the air, water, and land, accounting for 97% of mercury releases in the country.

Specifically, batteries are the largest contributor (796 kg Hg/yr), followed by thermometers (66 kg Hg/yr), medical blood pressure gauges (30 kg Hg/yr), and electrical switches and relays (16 kg Hg/yr). The total calculated mercury input to society in São Tomé e Príncipe is 940 kg Hg/yr.



How are People Exposed to Mercury?

Elemental mercury, which is found in manufactured products, is not necessarily toxic to humans. Exceptions may include dental amalgam and cosmetics, but these products are still under scientific investigation, so their potential harm is not yet fully characterized.

Methylmercury, the organic form of mercury, is toxic to humans because it can biomagnify in food webs and bioaccumulate over time in organisms. A neurotoxin, methylmercury can cause physiological harm and behavioral disorders in people.

Fish from the sea or freshwater systems can be a major source of methylmercury. In general, fish species that are small, short-lived, and forage low in the food web contain less methylmercury, while predatory species that are long-lived and grow larger can contain higher levels of methylmercury. Many of the fish available in São Tomé e Príncipe are safe to eat, although more information is needed about the mercury concentrations to better characterize how mercury is distributed in different species of fish in the waterscape of São Tomé e Príncipe:

Seafood with lower mercury levels (*healthier choices*):

- Anchovy, cuttlefish, flying fish, mackerel, round scad, salmon, sardines, squid, trout

Seafood with medium mercury levels (*moderate risk*):

- Eels, Spanish mackerel, octopus, seabream (or dentex)

Seafood with higher mercury levels (*riskier choices*):

- Atlantic bluefin tuna, Atlantic wreckfish (or rock bass), dogfish, king mackerel, shark, swordfish



Atlantic Bluefin Tuna

How Does Mercury Affect Ecological Health?

The process of methylation, the conversion of mercury to methylmercury, varies widely on the landscape and within the waterscape. Areas that are particularly sensitive to mercury deposition—where methylation rates are highest and biomagnification in the food web is greatest, and where animals experience significant reproductive harm—are called biological mercury hotspots. These areas generally represent aquatic ecosystems or have an aquatic connection within the food web.

Generally, aquatic ecosystems connected to wetlands, either marine (e.g., estuaries) or freshwater (e.g., lakes), are prime areas for high methylation rates. Fish and wildlife predators that live in estuaries and lakes, or that forage in a food web associated with

these habitats (e.g., mangroves), often contain elevated mercury levels. The combination of high methylation rates and longer-lived animals higher in the food web creates the greatest risk.

Habitats at Greatest Risk:

- Wetlands, mangroves, aquatic habitats near contaminated sites

Wildlife at Greatest Risk:

- Brown Booby, Sooty Tern, Brown Noddy, Black Noddy and Red-billed Tropicbird



Brown Booby



Lakes and Rivers



Coral Reefs and Beaches



Wetlands and Mangroves

What is the State of Mercury in São Tomé e Príncipe?

The impacts of mercury pollution can be challenging to identify and reverse. However, understanding the extent of mercury pollution is important because mercury can cause significant adverse effects to human and ecological health.

Lifecycle management of mercury-containing products presents the biggest challenge for Small Island Developing States (SIDS). The adoption of legislation that limits and restricts the importation of such products will be an important first step towards the successful implementation of the Minamata Convention that will help to reduce overall mercury releases on the island.

Like many SIDS, regional atmospheric mercury loads may be impacting the region's marine fisheries. However, with

greater collaboration and cooperation across the region, the potential risks associated with mercury in the environment can be reduced.

WHAT CAN YOU DO TO HELP?

- Choose healthier fish options (those with lower mercury levels) as part of your diet.
- Use your buying power—purchase no- or low-mercury product replacements when possible (See Useful Links on back page for more information).
- Support legislation that helps reduce the impacts of mercury on the environment.

Recommendations from the São Tomé e Príncipe Mercury Team

- Create legislation that can help facilitate a framework to comply with the Minamata Convention.
- Reduce the import and use of products that contain mercury by selecting no- or low-mercury product replacements:
 - Replace compact and linear fluorescent lights with LED bulbs;
 - Check the ingredients in skin lightening creams and lotions to avoid products that contain mercury; and
 - Choose brands of batteries that do not contain mercury.
- Properly store waste products with mercury and avoid using landfills by creating proper storage facilities for hazardous waste.
- Generate greater awareness and education through existing outreach programs; oversee the development and distribution of information on mercury to the public, including importers of manufactured products.
- Participate in global mercury database and monitoring programs and coordinate existing data with global and regional sampling efforts organized by UN agencies, including:
 - Hair samples for people
 - Muscle samples for fish
 - Blood, feather, and egg samples for birds

BRI's Mercury Work in São Tomé e Príncipe

 Biodiversity Research Institute (BRI) collaborates with its partners in São Tomé e Príncipe to help identify and estimate any major mercury sources in the region. An international advisor on mercury, BRI serves as co-lead of the UN Environment's Mercury Air Transport and Fate Research partnership area to assist with the development of a global mercury monitoring and observation system. In addition, BRI serves as International Technical Expert with the United Nations Development Programme (UNDP) and with UN Environment and an Executing Agency for the United Nations Industrial Development Organization (UNIDO).

Useful Links

- BRI mercury publications: www.briloon.org/hgpubs
- Minamata Convention: www.mercuryconvention.org

MIA Stakeholders

- Ministry of Agriculture and Rural Development
- Ministry of Education, Culture and Science
- Ministry of Defense and Internal Administration
- Ministry of Finance, Commerce and Blue Economy
- Ministry of Health

For More Information:

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