



The State of Mercury in Sri Lanka



The Minamata Convention on Mercury is the first legally binding global agreement specifically designed to address contamination from a heavy metal. Opened for signature in October 2013, 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. On October 14, 2014, the Government of Sri Lanka became a signatory of the Minamata Convention, which will enter into force 90 days after it has been ratified by 50 nations.

In order to meet its obligations under the treaty, the government of Sri Lanka will conduct a Minamata Initial Assessment (MIA) to quantitatively and comparatively determine the extent of local mercury pollution. Some information about mercury and recommendations from the Sri Lankan mercury team can be found within this brochure.



The Minamata Initial Assessment in Sri Lanka

What are the Sources of Mercury?

The origin of mercury can be natural (e.g., volcanoes) or anthropogenic (e.g., human-caused releases). Potential sources of mercury entering the country of Sri Lanka could include:

- Compact florescent lights and mercury vapor lights
- Thermometers, manometers, and sphygmomanometers
- Batteries and antifouling paints
- Dental amalgams
- Some skin lightening creams
- Emissions from coal power plants



The anthropogenic release of mercury through the air and water is also of concern. Globally, coal-fired power utilities and artisanal small-scale gold mining produce the highest mercury emissions.

The MIA process will help determine the extent of concern these sources are for Sri Lanka. Other potential local sources of releases include the jewelry sector and hydro facilities.



Forests

How are People Exposed to Mercury?

Elemental mercury, which is found in manufactured products, is not necessarily toxic to humans. Exceptions may include dental amalgams and thimerosal, 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.

Seafood, an important food source in Sri Lanka, can be a major source of methylmercury. In general, fish species that are smaller, short-lived, and forage low on the food web contain less methylmercury, while predatory species that are long-lived and grow larger contain higher levels of mercury. Many of the fish available in Sri Lanka are predatory and are high in the food web, however, fish mercury concentrations in the Indian Ocean tend to be lower than in the northern Pacific and Atlantic Oceans.

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

- Goatfish, Grouper (Kossa)
- Parrot Fish (Girawa)
- Lobster (Pokirissa), Octopus (Boowalla), Shellfish (Bellan)

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

- Sailfish (Koppara), Swordfish (Dethimora)
- Tuna (Kelawalla)

Fish is an important source of protein. It is important to include fish in your diet but be sure to eat a variety of fish and consider eating healthier choices on a more regular basis.



Coral Reefs

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 typically 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., beaches, coral reefs, and forests), contain elevated mercury levels. The combination of high methylation rates and longer-lived animals higher in the food web creates the greatest risk. It is unknown if Sri Lanka has biological mercury hotspots (i.e., where fish and wildlife reproductive success is harmed).

Habitats of Greatest Risk

- Wetlands, lakes, estuaries, and aquatic habitats near contaminated sites

Fish and Wildlife at Greatest Risk

- Tropicbirds, frigatebirds, terns, herons, and egrets



Lakes



Beaches

What is the State of Mercury in Sri Lanka?

The impacts of mercury pollution, which can have distant origins, are challenging to identify and to reverse. Mercury can cause significant adverse effects on human and ecological health. Sri Lanka is currently undertaking a Minamata Initial Assessment to determine the level of mercury pollution in the country. The results of the MIA will help direct both the government and local consumer about the best ways to reduce the impact of mercury in Sri Lanka.

The impacts of regional mercury loads in the Indian Ocean and the effect on commercial fisheries, specifically swordfish and tuna, may require broader regional actions—but MIAs are being undertaken by many countries in the region, which

should significantly reduce mercury in the area's landscape and waterscape.

WHAT CAN YOU DO NOW 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 (e.g., avoid compact fluorescent lights and skin lightening creams that contain mercury. See Useful Links on back page for more information)
- Support legislation that helps reduce the impacts of mercury on the environment

Preliminary Suggestions from the Sri Lankan Mercury Team

- Create legislation that can help facilitate a framework to comply with the Minamata Convention
- Reduce the import and use of products with mercury by selecting no- or low-mercury product replacements
- 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 efforts organized by the United Nations Environmental Programme:
 - Use hair samples for people
 - Use muscle samples for billfish and tuna
 - Use blood, feather, and egg samples for seabirds
- Create a technical committee on mercury to make use of relevant stakeholders and to increase capacity and awareness of mercury issues
- Ensure that there are continuous mercury monitoring programs in the Seychelles environment, emphasizing fish that are exported but also those destined for local consumption

MIA Stakeholders

- Ministry of Education
- Ministry of Finance
- Ministry of Fisheries
- Ministry of Health, Nutrition and Indigenous Medicine
- Ministry of Higher Education
- Ministry of Industry and Commerce
- Ministry of Local Government and Provincial Councils
- Ministry of Mahaweli Development and Environment
- Ministry of Power and Renewable Energy
- Ministry of Science, Technology and Research
- Central Environment Authority
- Centre for Environmental Justice
- Consumer Affairs Authority
- Coordinating Secretariat for Science, Technology and Innovation
- Cosmetic Devices and Drugs Regulatory Authority
- Dental Institute
- Department of Meteorology
- Faculty of Chemical and Process Engineering, University of Moratuwa
- Gem and Jewellery Research and Training Institute
- Import and Export Control Department
- Industrial Development Board of Ceylon
- Industrial Technology Institute
- Institute of Indigenous Medicine
- Institute of Oral Health
- Marine Environmental Protection Authority
- National Aquatic Resource Authority (NARA)
- National Aquatic Resources Research and Development Agency (NAARA)
- National Cleaner Production Centre
- National Engineering Research and Development Centre of Sri Lanka
- National Gem and Jewellery Authority
- Post Graduate Institute of Agriculture, University of Peradeniya
- Sri Lanka Customs
- Sri Lanka Standards Institution
- Sri Lanka Sustainable Energy Authority

For More Information:

Senarath Mahinda Werahera
smwerahera@yahoo.com



About Sri Lanka

Sri Lanka is a small island nation south of India in the Indian Ocean. A rugged land of rainforest, diverse wildlife, and many beaches, it is known for its ancient Buddhist ruins, national parks, and the sacred city of Anuradhapura. Sri Lanka shares maritime borders with India to its northwest and the Maldives to its southwest.

BRI's Mercury Work in Sri Lanka

Biodiversity Research Institute (BRI) collaborates with its partners in Sri Lanka to help identify and estimate any major mercury sources in the region. An international advisor on mercury, BRI serves as co-lead of the United Nations Environment Programme'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 is an executing agency for the United Nations Industrial Development Organization and an International Technical Expert for the United Nations Development Programme and the United Nations Environment Programme to conduct MIA activities in several countries.



Credits

Cover: Stilt fishermen of Sri Lanka © shutterstock-Val Shevchenko. Pages 2-3: Backdrop image: © shutterlk; Coral reef © Jolanta Wojcicka; Beach © Rafal Gadomski; Lake © Patrick Valmont; Forest © Rafal Gadomski; Lightbulb/mercury © shutterstock; Swordfish © shutterstock; Bridled Tern © Ann Sutton