



The State of Mercury in the Caribbean



The Minamata Convention on Mercury is the first 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.

Both Jamaica and St. Kitts and Nevis became parties to the Convention in 2017. In order to assist with preparations for the ratification and implementation of the Convention, the Governments of Jamaica, St. Kitts and Nevis, St. Lucia,

and Trinidad and Tobago each conducted a Mercury Initial Assessment (MIA). The primary activities of the MIA projects in the Caribbean included:

- A review of 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 emissions 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 UN Environment and the Basel Convention Regional Center for the Caribbean, based in Trinidad and Tobago. This brochure summarizes the major findings of the MIAs in the Caribbean.



Findings from the Minamata Initial Assessments

What are the Sources of Mercury?

Each participating Caribbean country is currently conducting a national mercury inventory using the UN Environment's *Toolkit for Identification and Quantification of Mercury Releases*. The primary sources of mercury in participating Caribbean countries are likely to include the following:

- Use and disposal of mercury-added products such as compact fluorescent lamps
- Mercury release from dental amalgam and other medical products
- Combustion of fossil fuels and oil and gas sector activities
- Cement production



Small Island Developing States (SIDS), including those in the Caribbean, face unique challenges related to the Minamata Convention, as territory size limits options for sound management and storage of hazardous waste. Possible solutions to these challenges may include extending manufacturer and distributor responsibility and raising awareness.



*Tropical Mangroves,
Trinidad and Tobago*

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.

As part of the Caribbean MIAs, a rapid assessment of mercury in targeted fish species was conducted for Trinidad and Tobago, St. Lucia, and St. Kitts and Nevis. Preliminary results are still being compiled. However, published mercury concentrations from tissues in fish and marine mammals in the Caribbean Sea indicate regular exceedance of various thresholds used by American and International entities (e.g., 0.22 ppm, ww by the Great Lakes Consortium for the U.S. and Canada; 0.30 ppm, ww by the U.S. Environmental Protection Agency; 0.50 ppm, ww by the European Commission and World Health Organization which includes an exemption for large predatory fish species of 1.0 ppm, ww).

Seafood with lower mercury levels (<0.22 ppm, ww; *healthier choices*):

- Small grouper, snapper, shrimp, tilapia, oysters, mahi mahi, salmon

Seafood with higher mercury levels (>0.22 ppm, ww; *riskier choices*):

- Many tuna species, barracuda, large grouper, king mackerel, swordfish, peto, Atlantic blue marlin



*Red
Snapper*



*Coastal Communities,
St. Kitts and Nevis*

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 Pelican, Magnificent Frigatebird, Masked and Red-footed Booby, White-tailed Tropicbird, Black-capped Petrel, Audubon's Shearwater, Bridled Tern, Sooty Tern

Brown
Pelican



Rivers and Streams,
St. Lucia



Coral Reefs and Beaches,
Jamaica

What is the State of Mercury in the Caribbean?

The impacts of mercury pollution can be challenging to identify and reverse. However, strategies to reduce mercury contamination are 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 islands.

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 Caribbean 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
 - 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 efforts organized by UN Environment:
 - Use hair samples for people
 - Use muscle samples for fish
 - Use blood, feather, and egg samples for birds

BRI's Mercury Work in the Caribbean



Biodiversity Research Institute (BRI) has collaborated with its partners in the Caribbean to help identify and estimate major mercury sources in Jamaica, St. Kitts and Nevis, St. Lucia, and Trinidad and Tobago. As an International Technical Expert, BRI provided training on the UN Environment's *Toolkit for Identification and Quantification of Mercury Releases* and assisted with the review of primary reports and products developed as part of the MIAs.

Basel Convention Regional Centre - Caribbean




The primary mechanism for assisting in the implementation of the Basel Convention and its obligations is a series of Basel Convention Regional Centres for Training and Technology Transfer (BCRC). Established across the world under Article 14 of the Convention, these Centres are meant to provide for the effective implementation of the Convention at the national to regional levels. The Basel Convention Regional Centre for Training and Technology for the Caribbean (BCRC-Caribbean) serves the Contracting Parties to the Basel, Rotterdam, Stockholm and Minamata Conventions within the Caribbean region and any other country consenting to be served by the Centre.

Useful Links

- BRI publications on mercury: www.briloon.org/hgpubs
- BCRC-Caribbean: www.bcrc-caribbean.org
- Minamata Convention: www.mercuryconvention.org

Global Health Trade-Off for Mercury and Omega-3 in Fish

Milligrams of Omega-3 Fatty Acids/4 Ounces of Cooked Fish →				
MEAL FREQUENCY RECOMMENDATIONS	<500 mg	500-1,000 mg	1,000-2,000 mg	> 2,000 mg
Unrestricted meals (< 0.05 µg/g)	Catfish, Clams, Crab* (most species), Croaker, Haddock, Scallops, <u>Shrimp</u> , <u>Tilapia</u> *	Blue Mussels,* Pink Salmon, Sockeye Salmon	Chinook Salmon,* Coho Salmon, <u>Oysters</u>	Atlantic Salmon, Sardines, Shad Healthier Choices
1-2 meals per week (0.05–0.22 µg/g)	Atlantic and Pacific Cod, Flounder, Grenadier, Hake, Lobster,* Sole	Atlantic Pollock, <u>Mahi Mahi</u> , Mullet, Scad, Squid, Skipjack Tuna, any canned tuna	Atlantic Horse Mackerel, European Sea Bass, Rays, Skates, Trout	Anchovies,* Herring
1 meal per month (0.22–0.95 µg/g)	<u>Groupers</u> , Orange Roughy, <u>Snapper</u>	Amberjack, <u>Barracuda</u> , <u>Bigeye Tuna</u> , <u>Bluefish</u> , Halibut, <u>Jack</u> , Trevally, <u>Wahoo (Peto)</u> , <u>Yellowfin Tuna</u>	Atlantic and Pacific Mackerel, <u>Albacore Tuna</u> *, <u>Atlantic Bluefin Tuna</u> , Chilean Sea Bass	Mercury concentrations vary widely across shark species. To learn more, visit: www.briloon.org/hgcenter
No consumption (> 0.95 µg/g)	<u>King Mackerel</u> Riskier Choices	<u>Atlantic Blue Marlin</u> , <u>Atlantic Sailfish</u> , Tilefish	<u>Dogfish</u> , <u>Ground</u> , and <u>Mackerel Sharks</u> ; Pacific Bluefin Tuna, <u>Swordfish</u> *	

Data Sources: BRI's Global Biotic Mercury Synthesis (GBMS) Database; U.S. Environmental Protection Agency; U.S. Food and Drug Administration; Great Lakes Consortium for the U.S. and Canada

*Pictured species; Underlined – species found in the Caribbean Sea

For More Information:

Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean Region (BCRC-C)
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October 2017

National Executing Agencies

- **Jamaica:** Environment and Risk Management Division; Ministry of Economic Growth and Job Creation
- **Saint Kitts and Nevis:** St. Kitts and Nevis Bureau of Standards; Ministry of International Trade, Industry and Commerce
- **Saint Lucia:** Sustainable Development and Environment Division; Department of Sustainable Development; Ministry of Education, Innovation, Gender Relations, and Sustainable Development
- **Trinidad and Tobago:** Environmental Policy and Planning Division; Ministry of Planning and Development

MIA Stakeholders

- Ministries responsible for the Environment
- Ministries responsible for Health
- Ministries responsible for Trade/Customs Division
- Ministries responsible for Energy /Power Generation
- Ministries responsible for Foreign Affairs and Trade Implications
- Ministries responsible for Legal Affairs
- Attorney General's Chambers
- Bureau of Standards
- Waste Management Companies
- Wastewater Authorities
- Waste Disposal Companies/Authorities
- Medical and Dental Associations
- Funeral Homes and Crematoria
- Manufactures Associations
- Traders/Importers of Mercury-Added Products
- Universities/Tertiary Institutions
- Non-Governmental Organizations
- Civil Society Organizations