



Cook Islands

Kiribati

Palau



Tonga



Vanuatu

# The State of Mercury in the Pacific Region



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 entering 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.

Cook Islands, Kiribati, Palau, Tonga and Vanuatu have made their intentions clear to become Parties to the Minamata Convention by declaring their participation in the Pacific Regional Minamata Initial Assessment.

In order assist with preparations for ratification and implementation of Convention, the Governments of these island nations will conduct a Minamata Initial Assessment (MIA). The primary activities of the MIA projects in the South Pacific include:

- 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 MIAs are conducted with financial assistance from the Global Environment Facility and are implemented in collaboration with United Nations Environment and the Secretariat of the Pacific Regional Environment Programme (SPREP). This brochure summarizes potential findings of the MIAs in the South Pacific.



# Findings from the Minamata Initial Assessments

## What are the Sources of Mercury?

Many Pacific countries are 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 Pacific countries are likely to include:

- Use and disposal of mercury-added products such as compact fluorescent lamps (CFLs)
- Mercury release from dental amalgam and other medical products
- Combustion of fossil fuels and oil and gas sector activities
- Waste deposition



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

## 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 the Pacific 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 Pacific nations.



*Yellowfin Tuna*

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

- Anchovy, Sardines, Skipjack Tuna, Squid

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

- Albacore Tuna, Groupers, Mahi-mahi, Yellowfin Tuna

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

- Barracuda, Blue Marlin, Indo-Pacific King Mackerel, Sailfish, Southern Bluefin Tuna, Swordfish

BRI will work with each focal country and the Pacific Islands Forum Fisheries Agency to help meet interests related to the South Pacific Tuna Treaty of 2002 and other fisheries-oriented treaties.




## How Does Mercury Affect Ecological Health?

Studies have shown that high mercury concentrations in fish (measured in methylmercury) can have negative impacts on fish growth, behavior, and reproduction. Consequently, fish-eating wildlife are shown to have decreased reproductive success when methylmercury concentrations in fish are high. As a neurotoxin, methylmercury can also have negative effects on behavior such as foraging or nest protection.

The process of methylation, the conversion of elemental mercury to organic 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.

Aquatic ecosystems, either marine (e.g., beaches and coral reefs) or freshwater (e.g., lakes and rivers), are often prime areas for high methylation rates.

Fish and wildlife predators that live in rivers 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 of adverse effects.



*Wedge-tailed Shearwater*

### Habitats at Greatest Risk:

- Wetlands, mangroves, aquatic habitats near contaminated sites

### Wildlife at Greatest Risk:

- Albatrosses, Cormorants, Frigatebirds, Petrels, Shearwaters, Terns



*Mangroves - Palau*



*Lagoons - Cook Islands*



*Lakes and Rivers - Kiribati*

## What is the State of Mercury in the Pacific Region?

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 humans and ecological health.

Lifecycle management of mercury-containing products presents the biggest challenge for 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 the overall mercury releases on the islands.

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

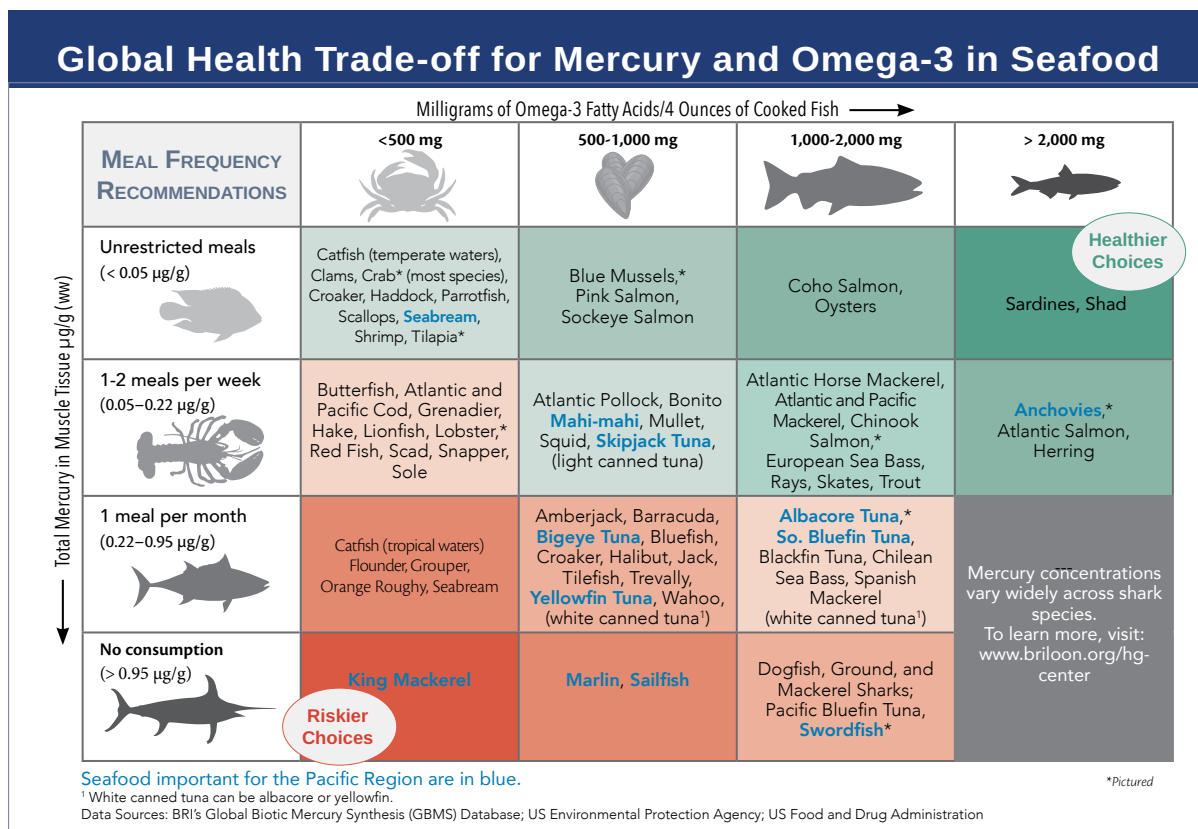
fisheries. However, with greater collaboration and cooperation across the region, the potential risks associated with mercury in the environment can be reduced.

### 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 substitutes when possible (See Useful Links on back page for more information).
- Support legislation that helps reduce the impacts of mercury on the environment.

## Potential Recommendations for the Pacific Region

- 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 South Pacific

Biodiversity Research Institute has collaborated with its partners in the Pacific region to help identify and estimate major mercury sources in the Cook Islands, Kiribati, Palau, Tonga, and Vanuatu. 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. [www.briloon.org/hgcenter](http://www.briloon.org/hgcenter)



### Secretariat of the Pacific Regional Environment Programme (SPREP)

The purposes of SPREP are to promote cooperation in the South Pacific Region and to provide assistance in order to protect and improve the environment and to ensure sustainable development for present and future generations. [www.sprep.org](http://www.sprep.org)

**Minamata Convention on Mercury**  
[www.mercuryconvention.org](http://www.mercuryconvention.org)

**CREDITS**—Cover: Outrigger canoe, Kiribati © Robert Szymanski-shutterstock; Inside spread: Aerial view of Muri Lagoon and Motus Islets in Rarotonga Island in the Cook Islands © ChameleonsEye-shutterstock; p 2: Mercury products © shutterstock; Yellowfin tuna © shutterstock; p 3: Mangroves in Palau © Danita Delmont-shutterstock; Lagoons in Cook Islands © ChameleonsEye-shutterstock; Lakes in Kiribati © Robert Szymanski-shutterstock; Wedge-tailed Shearwater © Jukka Jantunen-shutterstock