

EXECUTIVE SUMMARY
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Mercury in Fish



A Global Health Hazard

zero 
mercury working group

February 2009

**Mercury
Policy Project**

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Executive Summary

Methylmercury contamination of fish and fish-eating mammals is a global public health concern. The risk is greatest for populations whose per capita fish consumption is high, and in areas where environmental pollution has elevated the average mercury content of fish. But methylmercury hazards also exist where per capita fish consumption and average mercury levels in fish are comparatively low. In cultures where fish-eating marine mammals such as whales and seals are part of the traditional diet, methylmercury in these animals adds to total dietary exposure.

This report presents new test data on mercury levels in fish from three areas of the world: The Indian state of West Bengal, the Manila metropolitan area in the Philippines, and six member countries of the European Union. We also review some published data on methylmercury levels in pilot whales and other marine mammals consumed by Arctic populations, in the Faroe Islands and among the Inuit of northern Canada. Using those data, fish consumption data, and some reasonable assumptions, we examine a variety of plausible exposure scenarios for each region, and compare the consumer exposure estimates thus generated with three established reference standards for acceptable methylmercury exposure.

Our comparisons show that reference levels of methylmercury exposure are exceeded, often by a wide margin, by consumers in each country and area covered in this report. The situation in India is most severe; in that case, average per capita fish intake is high and mercury levels in the locally available fish are often elevated (25 of 56 varieties tested contained more than 0.5 mg/kg mercury). This combination produces doses above accepted international exposure guidelines for the average consumer eating an average amount of the average fish available in most tested locations; even more excessive doses for those who eat above-average amounts of fish, or fish with higher-than-average

mercury levels; and very high doses for children, who generally eat adult-sized food portions but whose body weight is smaller, and dosage therefore higher.

In the Philippines, where per capita fish consumption is also very high, and the six EU countries, where fish consumption varies among countries but is sometimes also high, there are two clear risk concerns. Adults and children who eat greater-than-average amounts of fish may get excessive methylmercury exposure even if the average mercury level in their fish is relatively modest; and people who prefer to eat predatory, mercury-accumulating species can easily be exposed to excessive methylmercury doses if they eat those fish often.

Consumption of pilot whale meat is a dominant and excessive source of methylmercury exposure for the Faroese, and mammals from high in the marine food web, especially beluga whale, can contribute substantially to methylmercury exposure among the Inuit.

We briefly review here a recent analysis of reported cases of clinical methylmercury poisoning in the United States, in patients who each ate relatively large amounts of high-mercury fish, such as tuna, swordfish, pike and sea bass. We conclude that similar health effects are likely to occur in each country covered by this report, at least among people with the greatest fish intake overall, and/or the strongest preferences for high-mercury fish varieties.

Even more important than clinically obvious methylmercury poisoning, and more likely to occur, is the risk of developmental neurotoxic effects in babies born to women who eat high-mercury fish, or eat large amounts of moderate-mercury fish, while pregnant. Subclinical but functionally significant neurotoxic effects may also occur in adults and children with methylmercury intake above reference levels, and research suggests that methylmercury exposure increases the risk of cardiovascular disease, as well.

The public health impacts of methylmercury in fish are therefore substantial, and demand an effective response from governments and other affected stakeholders. We present both general and specific recommendations regarding steps that should be taken to acquire better data, support improved risk assessments, choose risk management measures, and improve risk communication on methylmercury problems. Our recommendations apply both to the countries covered in this report and to other areas of the world, where the problem is equally in need of attention.

Recommendations

General Recommendations:

Risk Assessment

- A collaborative effort should be undertaken by United Nations Environment Program (UNEP) and the World Health Organization (WHO) to expand surveys of mercury levels in fish around the world.
- Governments and international bodies concerned with mercury and health (such as WHO and/or UNEP) should work together to develop a comprehensive, representative fish sampling strategy, conducted in key countries and/or regionally, in order to characterize mercury concentrations in a range of fish species.
- Sufficiently sensitive analytical methods should be employed to document low levels of mercury in many of the tested fish. Emphasis is needed on demonstrating that some fish varieties have low mercury levels and can safely be eaten often, as well as on determining which fish have higher mercury levels and should be eaten in more limited amounts.
- Fish consumption data should be collected, by amounts and species eaten, across a wide range of representative regional and national diets.

- Efforts should be made in each area surveyed to find out how often high-mercury fish like shark, tuna and swordfish are consumed, and to identify consumers who eat these varieties often.
- Populations at greatest risk should be identified (e.g., those who consume large amounts of fish, who consume species of fish with high concentrations of mercury, or both).
- Among those at-risk populations, a broad survey of consumer hair mercury levels should be carried out, to determine the distribution of mercury exposure and correlate it with fish consumption data.
- Populations with high and low mercury exposure should be compared in well-designed clinical screenings, to see if adverse health effects are occurring among the former.
- Finally, the UNEP Governing Council at its February 2009 meeting in Nairobi should specify a near-term mercury program and establish an Intergovernmental Negotiating Committee (INC) to negotiate a free-standing, legally binding instrument on mercury, one that enables implementation of the recommendations presented here, among others.

General Recommendations:

Risk Management and Risk Communication

- Countries should adopt a global legally binding instrument on mercury pollution to control the major sources of mercury emissions, reduce or phase out intentional uses of mercury in products and processes, and restrict or phase out mercury supply and trade.
- Measures are urgently needed to control emissions of mercury from coal-fired power plants, ore processing, cement manufacturing and other sources, and to phase out the intentional uses of mercury in products and processes. Collaborative international action is needed to achieve these goals.

- Using risk assessments based on appropriate national and regional data, countries should review the lists of fish that are now exempt from meeting the widely applied general limit of 0.5 mg/kg in fish sold, with a view towards reducing the number of species allowed to contain higher mercury levels.
- WHO, UNEP and member governments should provide capacity building assistance as needed and work with affected stakeholders to develop effective risk communication programs, to teach consumers in all countries which fish contain significant levels of mercury, and which contain the lowest levels and can safely be eaten most often.
- A particular focus should be on warning consumers who like swordfish, tuna and shark that these varieties (and other high-mercury fish, if such are determined to be important by the surveys called for above) should be eaten infrequently or not at all.
- UNEP, the Food and Agriculture Organization (FAO) and member governments should work together to increase awareness of methylmercury contamination as an issue in fisheries management and in aquaculture development, and to engage officials in those disciplines with other stakeholders in the effort to mitigate mercury risks.
- Collaborative international research efforts such as the Arctic Monitoring Assessment Program (AMAP) should continue to be supported, and additional countries should become engaged, to the extent feasible.
- In Europe, the proposed regulation for labeling foodstuff, currently considered by the European Parliament, should include advice towards vulnerable groups with respect to the mercury content of fish and seafood; it should be finalized, adopted and implemented.
- The survey of mercury in fish conducted in West Bengal should be confirmed by further testing, and replicated in other Indian states.
- Since methylmercury in fish is truly a global problem, any nation not named in this report but where fish is an important part of the diet should pursue the generic recommendations listed above.



The Mercury Policy Project would like to thank the following people for their assistance.

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Specific Recommendations
for Particular Countries and Populations

- In the Faroe Islands, with due respect to the historical and cultural importance of pilot whale in the Faroese diet, the proposal to abstain from human consumption of pilot whale should be adopted, in the interest of protecting public health.
- More extensive data should be collected on mercury levels in the muscle meat of marine mammals eaten by the Inuit, especially seals.

The Zero Mercury Working Group is an international coalition of more than 75 public interest non-governmental organizations from around the world formed in 2005 by the European Environmental Bureau and the Mercury Policy Project/Ban Mercury Working Group. The aim of the group is to continually reduce emissions, demand and supply of mercury, from all sources we can control, with the goal of eliminating mercury in the environment at EU level and globally. Please see www.zeromercury.org