



Frequently Asked Questions about Mercury in bass

from Ecology's Environmental Assessment Program

Mercury in Edible Fish Tissue and Sediments from Selected Lakes and Rivers in Washington State

Q: What do these results from 20 lakes and rivers tell us about other lakes and rivers in Washington?

A: Although we have not examined every water body in Washington, information from this study and from a 2001 study on mercury levels in Lake Whatcom bass are consistent with national data on mercury levels in small-mouth and large-mouth bass. It is likely that we would find similar results in other lakes and rivers across Washington. Repeatedly, we found that, the larger the fish, the higher the mercury concentrations.

Q: What about fish other than bass, such as trout or salmon?

A: The Department of Ecology and other agencies, such as the U.S. Geological Service and the federal Environmental Protection Agency, have conducted limited testing of other freshwater species, such as trout, kokanee, walleye and perch, in some areas of the state. This testing has found lower levels in these species compared to bass, with the exception of walleye, which had mercury levels comparable to bass. As resources become available, additional fish may be sampled in Washington in the future.

It's important to note that mercury tends to accumulate in muscle, not fatty tissue. Bass are more muscular, while salmon and trout tend to have high fat content and, thus, are less likely to accumulate mercury.

Q: Have you studied mercury levels in Puget Sound fish or shellfish?

A: Numerous study results show a range of mercury in Puget Sound fish and shellfish. Most fish and shellfish test safe for mercury levels. However, studies have resulted in 3 fish or shellfish consumption advisories in Puget Sound for fish contaminated with mercury: Eagle Harbor (Bainbridge I.), Sinclair Inlet (near Bremerton), Lower Duwamish R. (in Seattle). The state Department of Fish and Wildlife conducts limited testing of rockfish in Puget Sound as part of the Puget Sound Ambient Monitoring Program.

Q: Are the mercury levels in Washington's bass higher or lower than the mercury in canned tuna?

A: The average levels in bass are higher than the average levels found in tuna. The average level of mercury in canned tuna, as reported by the FDA, is approximately 0.170 ppm, while the average level of mercury reported in Ecology's study of small-mouth and large-mouth bass is 0.217 ppm.

Q: How about other fish from the ocean?

A: In 2001, the Food & Drug Administration, the Environmental Protection Agency, and Washington State Department of Health issued fish advisories for several marine fish species due to the level of mercury they contain. They include shark, swordfish, king mackerel, and tile fish. Washington's advisory also includes large tuna and canned tuna. FDA has the authority to test and regulate commercially available fish, but currently is not conducting such tests.

Q: So, is eating fish still good for you?

A: Eating fish provides tremendous health benefits. It often is low cost, easy to prepare, and a source of good nutrition. The state Department of Health recommends that you eat a *variety* of fish and shellfish as a part of a healthy, balanced diet. Certain fish, including shark, swordfish, king mackerel, tile fish, tuna steaks, canned tuna, and small-mouth and large-mouth bass, should be eaten in moderation.

Q: Has the Department of Ecology's study been peer-reviewed and validated by scientists outside of Ecology?

A: This study followed generally accepted study design, sampling, quality assurance, statistical and reporting practices. The Ecology professionals involved in the mercury in fish tissue report have designed, collected samples, done statistical analyses, and written reports of a similar nature for several years. This report was peer reviewed by several expert Ecology staff as well as the state Department of Health before being issued.

Q: If someone wants to know whether the fish in their own lake or river has high mercury levels, how would they find out?

A: Surprisingly little is known about mercury levels in Washington's fresh or marine waters. This new study from Ecology, sampling 18 lakes and 2 rivers, is the first statewide look at mercury in fish – specifically bass. Additional monitoring will occur only if funds are available. But we do expect that we would find similar results in bass throughout the state. Note: Environmental data collected by Ecology on mercury in fish tissue is available on the Web at <http://apps.ecy.wa.gov/eimreporting/> via Ecology's Environmental Information Management System.

Sampling **has** been done in connection with several toxic cleanups, leading the Department of Health to issue mercury-related fish-consumption advisories in five sites in Washington: Eagle Harbor (Bainbridge I.), Sinclair Inlet (near Bremerton), Lower Duwamish R. (in Seattle), Lake Whatcom, and Lake Roosevelt (near Grand Coulee). Information about those advisories is available on the Web at www.doh.wa.gov/fish or by calling Dept. of Health toll-free at 877-485-7316.

Q: Will you ask the legislature and governor for money to expand mercury sampling to other water bodies or to other types of fish?

A: We requested funding from the legislature for the 2003-05 budget period, but it was not approved. If resources become available, additional fish may be sampled in the future for mercury and/or other toxins.

Q: If it's not safe to eat the fish, is it also not safe to swim in these lake and rivers?

A: In lakes, ponds, streams and the ocean, mercury can accumulate and become concentrated in fish or other organisms that live in the water body. Mercury levels in fish can be up to a million times higher than in the water the fish live in. Thus, the fish may be unsafe to eat while the water is okay to swim in.

Q: Where is the mercury in the lakes and rivers coming from?

A: Mercury is released into surface waters, either from the natural weathering of mercury in rocks (e.g., cinnabar), volcanic activity, or from human sources, including industrial activities, the burning of fossil fuel or consumer products. Researchers estimate that human activities over the past 100 years have more than doubled the amount of mercury released freely into the environment (rather than bound up in rocks). Mercury cycles globally by evaporating from soils and surface waters to the atmosphere, where it is carried on the winds and eventually redistributed on land and surface water, and then re-absorbed by soil or sediments – and the cycle begins again. When released into the air or water, inorganic mercury is converted to organic mercury, which is the primary form that accumulates in fish.

Q: Is it true that much of the mercury in Washington's environment is being carried on the wind currents from China?

A: We have reviewed the information provided by those who have suggested that a majority of mercury pollution in Washington comes specifically from Asia. After consulting with the study's authors, Ecology has determined that the studies were taken out of context. The Ecology Department has not found any definitive information that suggests a majority of mercury pollution in Washington comes specifically from Asia.

Mercury is both a global and a local problem. Depending on its form, mercury may enter the environment close to the source of release or may travel great distances via wind currents. While data are lacking on specific geographic sources of mercury deposited in Washington, some comes from local sources and some from outside the state.

Q: Can we coordinate with other states and countries to halt mercury pollution?

A: Mercury contamination in fish is a worldwide problem, and there are global efforts to address it. Washington is coordinating with the EPA and the Environmental Council of the States to address this problem on a national scale. And EPA is working with the United Nations Environment Programme (UNEP) to address this issue at the international level.

Q: If bass accumulate mercury by eating smaller fish, where do the smaller fish get it?

A: Small fish get mercury from the critters and bugs they eat that, in turn, eat plants on the lake bottom that uptake the mercury from the bottom sediments. Large fish get mercury from the prey they eat, such as small fish. And all fish also absorb methylmercury from water as it passes over their gills.

Q: Have there been any mercury-poisoning cases in humans in Washington?

A: To the best of our knowledge, there have been occasional emergency cases of mercury ingestion by small children who accidentally break a fever thermometer in their mouth and swallow some of the liquid mercury. These cases receive proper medical treatment, usually in the emergency room. The broader concern for the departments of Ecology and Health are the long-term effects of eating fish that have elevated levels of methylmercury.

Q: How would someone know if they have mercury poisoning? Are there any outward symptoms?

A: While there are known symptoms associated with mercury poisoning, these effects are generally seen only in large, short-term exposures, not typically observed in the U.S. In fact, three large research studies aimed at addressing potential threats to human health did not report any clinical signs of mercury toxicity in people exposed by consuming fish. The concern is about long-term neurological and developmental effects that typically are not seen by a physician. These studies showed that methylmercury exposure was associated with poor neurodevelopment functional outcomes, such as dysfunctions in language, attention and memory.

Q: Mercury is a naturally occurring element and has always been with us. What has changed?

A: In nature, mercury tends to be bound up in rocks and soil, widely dispersed, and does not easily enter the food chain. But when humans extract mercury from rocks for various purposes, or burn fossil fuels, it is released into the air and water, where it can enter the food chain more easily and become concentrated in ways that would not typically occur in nature.

The report entitled *Mercury in Edible Fish Tissue and Sediments from Selected Lakes and Rivers in Washington State* can be accessed through Ecology's Web site. The address is: <http://www.ecy.wa.gov/biblio/0303026.html>.

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