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Focus on Mercury in Fish

Mercury is a naturally occurring metallic element that is found in trace amounts in air, water, and soil. In nature, mercury tends to be bound up in rocks and soil and is widely dispersed. Much of it is locked away in coal and other geologic deposits, where it does not pose a danger to living organisms. However, human activities can release mercury from these natural sources.

Mercury and the Food Chain

When humans extract mercury from rocks or burn fossil fuels, it is released into the atmosphere. Airborne mercury can eventually settle onto soil and into rivers, lakes, and oceans, where aquatic microbes convert it to methylmercury through a biochemical reaction. Methylmercury is highly toxic. Fish absorb methylmercury as they feed on other aquatic organisms. As larger fish eat smaller ones, concentrations of the pollutant increase in the bigger fish, a process known as

bioaccumulation. Thus, methylmercury enters the food chain and becomes concentrated.

Mercury and Public Health

In humans, studies have shown that chronic mercury poisoning may occur when fish are frequently eaten that contain elevated levels of methylmercury. As this heavy metal accumulates in human tissue, metabolic and neurological damages may result.

Humans of all ages are susceptible to chronic mercury poisoning. However, pregnant women and children under age six are especially susceptible to mercury poisoning, which may harm developing nervous systems in fetuses and young children, permanently affecting their ability to learn. Adults exposed to high levels of methylmercury also can suffer from central-nervous-system and cardiovascular problems.

DEQ study finds elevated mercury levels in Idaho fish

In 2007, the Idaho Department of Environmental Quality (DEQ) conducted a study of methylmercury, arsenic, and selenium concentrations in freshwater fish in lakes and reservoirs across the state of Idaho.

Methodology

A total of 225 waterbodies bigger than 50 acres were randomly selected. Of these, 89 were eliminated due to a lack of water or fish. Another 41 were eliminated due to inaccessibility or private ownership, leaving a total of 95 waterbodies. Due to budgetary considerations, a total of 50 were sampled.

Of the 50 waterbodies sampled, 20 were larger than 3,000 acres, representing 40 percent of the lakes sampled. The map on back shows the location of lakes and reservoirs sampled and the levels of methylmercury found.

A total of 89 composite fish samples were obtained. Species of fish sampled included smallmouth and largemouth bass, walleye, yellow perch, and lake trout.

Key Findings

The sampling yielded the following results:

- Of the 50 lakes sampled, 20 were found to contain at least one species with methylmercury levels above the criterion (0.3 mg/kg). This was equal to 40% of lakes sampled.
- Of the 89 composite samples obtained, 27 were above the mercury standard, equal to 30% of samples.

[more >](#)

A DEQ water quality specialist prepares fish for testing. A total of 89 composite fish samples from 50 waterbodies were tested.



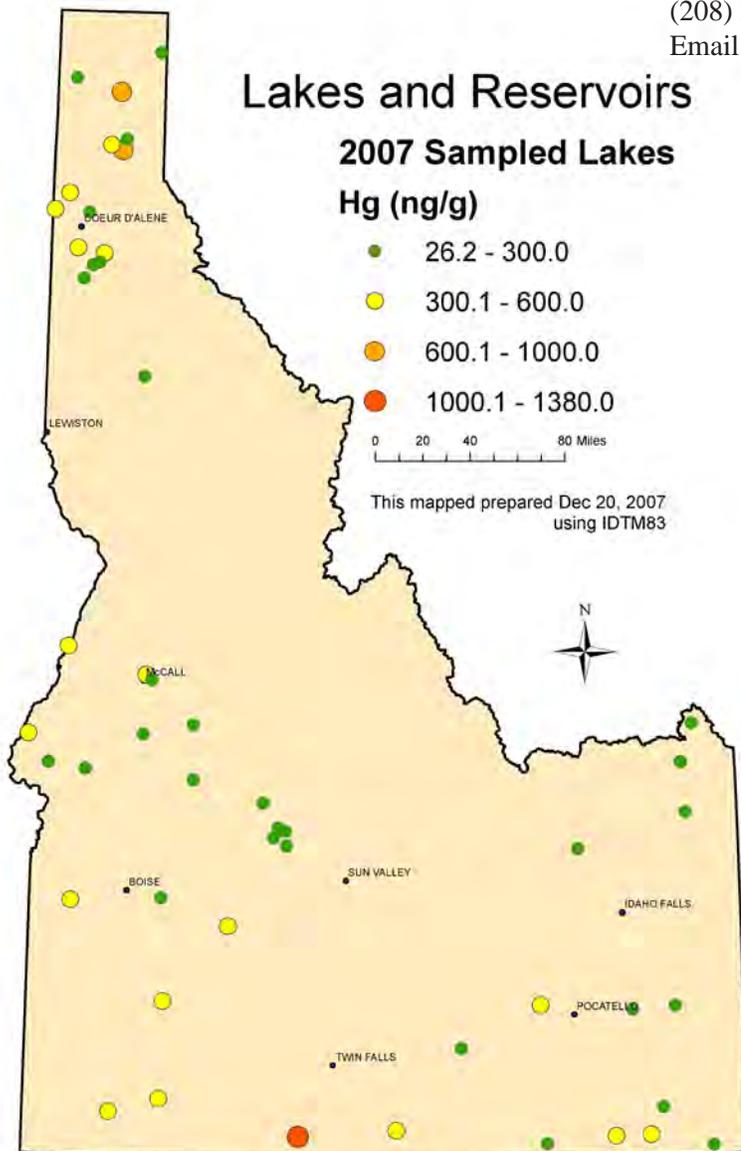
DEQ study on mercury in Idaho fish

Key Findings (continued)

- Extrapolating the results to all 95 waterbodies in the sample frame, 29% could contain at least one species with mercury levels above the standard.
- Since the basic sampling unit was a waterbody rather than a fish species, a similar extrapolation for fish cannot be made.
- The highest methylmercury level was found in walleye samples from Salmon Falls Creek Reservoir. Smallmouth bass, also from Salmon Falls Creek Reservoir, were a close second.
- Two other waterbodies sampled had two species with fish tissue above the mercury standard—Brownlee Reservoir and Lake Pend Oreille.
- The arsenic and selenium results revealed no widespread problems with these contaminants in lake and reservoir fish.

For more information about mercury in fish and the 2007 DEQ study, contact:

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Note: Idaho's water quality standard for mercury is 0.3 milligrams methylmercury per kilogram of fresh weight fish (0.3 mg/kg = 300 ng/g). This criterion is based on protecting an adult consumer who eats an average of 17.5 grams of fish per day—about one 8-ounce portion every other week.