

Mercury in Texas Fish: Cause for Concern?

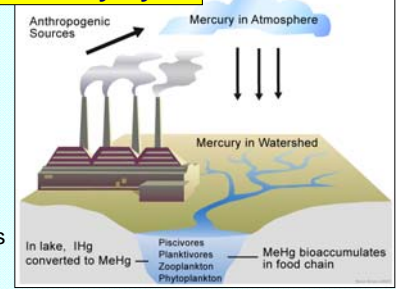
What is mercury?

Mercury is an element that is found naturally in the earth. Its symbol on the periodic table is Hg. It is one of only two elements that are liquid at room temperature. This property of mercury led to its widespread use in thermometers and thermostats.

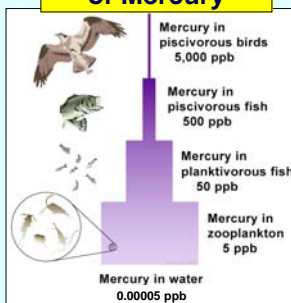
If mercury is “natural” why are people concerned about it?

Before the industrial age (circa 1850) mercury was found at low levels in the biosphere (the biosphere is all the areas of the earth where life is found). However some industrial processes release mercury into the environment. Now mercury is found at much higher concentrations than it was in the past. Although there are many industrial sources of mercury, the main sources of mercury in the U.S. are coal-burning power plants. When coal is burned to generate electricity, many by-products, including mercury, are produced. Some of these by-products, like mercury, are released into the atmosphere through the plant's smoke stack. Some mercury is deposited near the power plant but some mercury remains suspended in the atmosphere and can travel as far away as the Arctic. Once mercury is deposited on the earth it can be carried by streams and rivers to lakes and reservoirs. In lakes and reservoirs bacteria chemically alter mercury to a compound called methyl mercury, the most toxic form of mercury.

Mercury Cycle



Biomagnification of Mercury



How does mercury get into fish?

Methyl mercury is the form of mercury that is most easily absorbed by organisms. Because methyl mercury is produced by bacteria in lakes and reservoirs, mercury contamination is usually only a problem for organisms that live in these habitats. That is why fish and not other types of food like beef and chicken have advisories warning consumers about mercury. Although methyl mercury can be absorbed by all organisms, concentrations in lakes and reservoirs are so low that it is safe for people to swim in these habitats. Microscopic invertebrates in lakes called zooplankton are exposed to mercury when they eat algae that have absorbed methyl mercury. Small fish are exposed to mercury when they eat zooplankton and large fish, like largemouth bass, are exposed to mercury when they eat small fish. Mercury goes through a process called biomagnification which means that it is found at higher and higher concentrations as it moves up a food web. In other words, although the concentration of mercury is low in algae and zooplankton it can be very high in large fish. Mercury is sometimes measured in units called parts per billion or ppb. One ppb of mercury means that there is one part mercury for every billion parts of water or tissue.

Is the mercury in fish dangerous?

Mercury has been shown to have negative effects on the nervous and cardiovascular systems of humans. Mercury in fish is a potential threat to human health because fish make up such an important part of our diets. However, the concentration of mercury in most fish is so low that they only pose a problem to pregnant women and young children. This is because a fetus or a child's brain is still developing and can be affected by levels of mercury that don't harm adults. The United States Environmental Protection Agency, in conjunction with the Food and Drug Administration, issued a warning stating that pregnant women and young children should limit the amount of certain types of fish in their diets. Studies conducted by the Environmental Protection Agency and the University of North Carolina indicate that 16-20% of U.S. women of childbearing age have mercury levels high enough to cause damage to a developing fetus. In addition to posing a risk to humans, mercury-contaminated fish have been found to harm fish-eating birds like loons.

Should women and children stop eating fish?

While almost all fish have been found to contain mercury, only some fish have mercury levels that are high enough to be dangerous. In fact, fish contain Omega-3 fatty acids which have positive effects on health for adults, children, and developing fetuses. The good news is consumers can receive health benefits from eating fish and still avoid mercury by consuming types of fish that have been found to be low in mercury. The Environmental Protection Agency and Food and Drug Administration make specific recommendations about which types of commercial fish should be avoided and which types should be consumed in moderation. Types of fish that should be avoided include shark, swordfish, king mackerel, and tilefish. Go To the Environmental Protection Agency's web page at <http://www.epa.gov/waterscience/fish/> for more information.

Environmental Protection Agency's advice on reducing your exposure to mercury

- Do not eat Shark, Swordfish, King Mackerel, or Tilefish
- Eat up to 12 ounces (2 average meals) a week of a variety of fish and shellfish that are lower in mercury.
- Five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock, and catfish.
- Another commonly eaten fish, albacore ("white") tuna has more mercury than canned light tuna. So, when choosing your two meals of fish and shellfish, you may eat up to 6 ounces (one average meal) of albacore tuna per week.

Fish Advisories



Are fish in Texas reservoirs safe to eat?

The Texas Department of State Health Services tests fish in Texas reservoirs and issues fish advisories or bans if the levels of mercury or other contaminants in fish are high. Advisories and bans are issued for specific species in specific reservoirs. An advisory means that consumers should limit their consumption of that particular species, while a ban means that consumers should not eat or even possess the affected species. Eleven reservoirs and the entire Gulf Coast have fish advisories due to high levels of mercury in fish. Consult an *Outdoor Annual* (Hunting and Fish Regulations) the Texas Parks and Wildlife Department website (http://www.tpwd.state.tx.us/publications/annual/fish/consumption_bans/) or the Texas Department of State Health Services website (<http://www.dshs.state.tx.us/seafood/survey.shtm>) for more information on Texas fish advisories. In general, top predator fish like largemouth bass and flathead catfish have the

highest levels of mercury. Also, because mercury accumulates in fish as they age, large individuals of any species could have high levels of mercury. The Texas Department of State Health Services recommends eating a variety of fish to minimize exposure to mercury.

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