



## Mercury in Freshwater Fish

At least 26 US states have fish consumption advisories as a result of mercury contamination. In February New Jersey issued advisories for 15 lakes because they found pickerel, bass and bullhead with mercury concentrations above the FDA action level of 1 part per million.

### Warning

The Delaware Riverkeeper advises that children under 6, pregnant women and breast feeding mothers and women wishing to become pregnant avoid eating large freshwater fish taken from lakes.

While official state advisories against any human consumption name only specific species from specific lakes which have been sampled, the Riverkeeper feels that the overall magnitude of the mercury contamination problem warrants additional caution by vulnerable parts of the population until further information is available. In general, fish taken from flowing streams do not show high levels of mercury contamination.

Eating as little as one meal of mercury-contaminated fish per week can pose significant health risks since mercury accumulates in the human body. The most dangerous fish to eat from contaminated waters are the oldest, largest fish of the predator species most prized by sport fishermen.

There is no way to trim away contaminated portions or of cooking to render the mercury harmless. Mercury is found throughout the flesh of contaminated fish.

Official advisories warn against eating these fish in the Delaware River watershed because of mercury contamination over 1 ppm: walleye: Lake Wallenpaupack, PA pickerel, bass or yellow bullheads: Merrill Creek Reservoir, Warren Co. NJ, New Brooklyn Lake, Gloucester Co. NJ near Glassboro, Wilson Lake, Gloucester Co. NJ outside Glassboro, Union Lake, Cumberland Co. NJ between Millville and Vineland, East Creek Lake, Cape May Co. NJ outside Belleplain, Lake Mummy, Cape May Co. NJ in Belleplain

In New York State, no specific waterbodies in the Delaware watershed have mercury advisories, but the state has a general advisory of "no more than a 1/2 pound meal per week from any water body in the state", a restriction originally prompted by mercury contamination.

In the state of Delaware there are no specific mercury advisories.

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### **Hints for anglers suggested by researchers (from Science News, 3/9/91)**

--Stick with small fries. Methylmercury accumulates over time, so the older fish will tend to have the highest levels. --Go to larger, deeper lakes. There is a correlation between lake size and methylmercury concentrations in fish, perhaps because smaller, warmer lakes which increase the rate at which microbes methylate mercury. --Consider going for bottom-feeding fish which eat off lake floor sediments instead of smaller fish. --Avoid fishing reservoirs less than two or three decades old. Flooded forest debris provides a huge meal for methylating microbes and because they're working faster they convert more mercury.

### **Human health effects**

At low maternal mercury levels, fetuses may develop cerebral palsy, physical deformity and mental retardation even if the mother exhibits no outward symptoms. Mercury can cross the blood-brain barrier and the placenta and be passed into mother's milk to nursing babies. Symptoms of long-term ingestion of mercury-contaminated fish include numbness of the extremities, headaches, irritability, depression, insomnia, and memory loss. High levels of mercury poisoning can bring tremors, spasms, kidney damage, deafness, blindness and death.

### **Sources of atmospheric mercury**

There is growing evidence that airborne mercury is the primary source of mercury in lakes and wetlands in wide portions of the United States and Canada. Natural sources (volcanos, outgassing from rock and soil) have been overtaken by man-made sources. Natural levels in the atmosphere are calculated to have been about 25% of current concentrations. About 930 tons of gaseous mercury are drifting in the world's atmosphere at any given moment. Clean Water Action estimates that coal fired power plants account for 192,000 pounds of mercury released to the U.S. atmosphere out of a total of 540,000 to 1,000,000 pounds released each year. Municipal waste incinerators produce nearly 96,000 pounds. Other sources are oil and gas combustion, vapor from latex paint, chlorine manufacturing, breakage of fluorescent lamps and incineration of medical and industrial wastes. Mercury can also evaporate from sediments contaminated by discharges to waterways.

### **How does mercury get into fish?**

Inorganic mercury washed into waterbodies is converted to an organic form, methylmercury, by the action of microbes. Mercury contaminated plankton is eaten by small fish and increasingly large fish feed on them. Higher rates of methylation are found in acidified waterbodies (low pH), and sulfates from acid rain may also accelerate methylation. There is some indication that smaller, warmer, more eutrophic bodies have higher rates of methylation. Methyl mercury is the element's most toxic form; it not only accumulates in the aquatic foodchain but tends to concentrate strongly as it is passed upward in the food chain. Thus methylmercury concentrations in predator fish can be a million times higher than those of the surrounding water.

### **BE A RIVERKEEPER**

Report pollution incidents and other threats. Riverkeeper staff will investigate your call and follow up with agencies contacted. All incidents reported are recorded in the Delaware River Citizen Database. You may also call this number for more information about mercury in the Delaware River watershed.