

# GSBSD Superintendent Concerned About Mercury Levels

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Great Salt Bay Sanitary District Superintendent Mary Bowers has taken it upon herself to monitor and document mercury before it gets into the water.

Bowers noted since the enactment of the Bush administration's Clear Skies Act initiative of 2003, the mercury level has risen steadily in local bodies of water.

The Clear Skies Act was opposed by the Natural Resources Defense Council, by conservationist groups such as the Sierra Club, Congressman Harry Waxman of California, and others who all cite the act weakens controls on mercury pollution levels, compared to what would have been achieved by just stringently enforcing the existing Clean Air Act.

"It all started with a technology that enables us to test for mercury down to the parts per trillion level, when prior measurement was parts per million. At that level, mercury often doesn't show up," explained Bowers.

Some years ago, the state of Maine warned fish consumers about levels of mercury and the dangers the heavy metal poses to pregnant women and developing and growing children. Maine released recommended consumption guidelines, and then-governor Angus King vowed to learn from where the mercury comes.

Water treatment plants were charged with testing for mercury in the effluence (or treated water). Bowers took it upon herself to also test for mercury in influence water, that is, coming directly from the environment such as rain, fog, and sewerage. Over the years, Bowers has observed the amount of atmospheric mercury slowly rise, in direct relationship to the easing of clean air regulations and restrictions.

However, Bowers wasn't alone in her observations and in March of 2005, nine states: Maine, Massachusetts, New Hampshire, Vermont, Connecticut, New York, New Jersey, California, and New Mexico, joined together and filed suit against the Environmental Protection Agency seeking tougher mercury rules. The suit challenged an EPA rule that removes power plants from the list of pollution sources subject to stringent pollution controls under the federal Clean Air Act. Coal-fired power plants are the largest source of uncontrolled mercury emissions, generating 48 tons of mercury emissions per year nationwide.

According to the suit, mercury emitted from coal combustion is deposited on land and water. It enters the food chain and ultimately is consumed by humans, who are harmed by its action on the nervous system. Pregnant or nursing mothers and young children are most at risk.

Assuring the public, Bowers explained treating water does reduce mercury somewhat, and the mercury coming down through rainwater and fog is in the form of elemental or

inorganic mercury, which is only mildly toxic at low doses. But when inorganic mercury reaches freshwater or marine environments, it can be converted into a toxic substance called methylmercury. "Bacteria in certain water bodies and under certain conditions makes methylated mercury and that is what is toxic. It bio-accumulates and bio-magnifies," she said.

Methylmercury enters the bodies of small aquatic organisms, and through the food chain is passed up to larger and larger predators. Birds like eagles and loons, and mammals like otters and seals, consume predatory fish, like largemouth bass. These high food chain species end up with very high concentrations of mercury in their bodies.

An immediate environmental impact can be seen in New England loons. Bowers said the mercury toxicity is causing problems with loon chicks, reproduction and development. Mercury affects the central nervous system of brooding loons, causing them to "lose track of time" and they're not sitting on their eggs for the correct incubation period, causing egg mortality. Biological scientists like University of Southern Maine's Dr. David Evers, also of the BioDiversity Research Institute in Gorham, have reported loon reproduction is down 40 percent in the Northeast, a level too low to sustain the species.

Atmospheric mercury is but one source of heavy metals in water; products consumed in households everywhere enter the water supply through sewage.

The Association of Metropolitan Sewerage Agencies (AMSA) represents the interests of the country's wastewater treatment agencies, and maintains a key role in the development of environmental legislation. AMSA has tested household products, and has produced a list of consumer goods in which mercury is used in the manufacturing process.

"There's an effluent limit for our wastewater plant for mercury, and it's 20.9 parts per trillion," said Bowers, "and it's amazing to look at the AMSA's mercury concentration list of toiletries, common household and food products and find Kool-Aid Mountain Twists has 6,070 ng/kg (nanograms/kilograms) or 6,070 parts per trillion of mercury."

Perusing down the list shows everyday items like Crest toothpaste (490 ng/kg), Zest Soap (25,000 ng/kg), Extra Soft Quilted Northern Toilet Tissue (1,510 ng/kg), and Cascade Gel dishwasher detergent (730 ng/kg) all containing mercury.

Common laundry bleach is full of mercury, and is used in the process of manufacturing other items. In Maine a campaign was launched to raise awareness of common sources of mercury, such as thermometers and computer screens. "They thought in theory," said Bowers, "a collection program would get the obvious sources of mercury out of our system, but the DEP kept testing fish flesh. It's amazing the highest concentration of mercury was in Acadia National Park and the DEP wanted to know where it was coming from."

GSBSD collects samples twice yearly to monitor for mercury, and the protocol process for collection is right out of a sci-fi ritual, or a sterilized operating theatre.

Wastewater Division Manager Leeanna Hutchings described donning Tyvek suits, gloves, and the process of collection, right down to the sterile ("clean" and contaminated ("dirty") materials and bags and requirements of "no breathing" on the specimens if they have mercury fillings in their teeth.

This collection process is how Bowers found out "the levels in the rainfall are consistently higher than levels in our effluent, yet the wastewater treatment is always being blamed. It is very disturbing."

Speaking with a state toxicologist, Bowers learned there's not a direct correlation between the methylmercury and organic mercury. She asks if there's a way to slow down the process of methylation, if the bacteria are treated in some way. "If you raise the pH a few degrees, would it prevent the bacteria from converting it to methylmercury?" she asked. "The frustrating part for me is the DEP mandates we do the testing, yet nothing is being done with the data. We have to spend the money for this really expensive test, and why are we doing that when it is coming down in the rain in such high concentrations? I'm really concerned."

There is some encouraging news however on the EPA lawsuit front. The EPA announced on Dec. 27 the approval of a Northeast states' plan designed to lower mercury levels in fish throughout New England and New York. The plan calls for 98 percent reduction from 1998 levels of mercury from atmospheric sources in order to make mercury levels in fish low enough for the states to lift fish consumption advisories.

The announcement, however, does not address the coal-combustion plant's mercury emissions throughout the US, traveling on the jet stream west to east that affect the atmosphere over New England.

Though Bowers is a bit encouraged by the news, nonetheless she said the laws definitely are not working. "We have to identify the source, and reduce the source," said Bowers.

Within its customer base, GSBSD works to educate the public on clean water issues. Bowers places information in customer bills, and conducts tours of the sanitary district for school children. "We perform a lot of education, but overall, we just want our customers to be aware of how they can help through the products they use."

For more information on the Clear Skies Initiative Act, visit [www.whitehouse.gov](http://www.whitehouse.gov). For information from the National Resources Defense Council, visit [www.nrdc.org/air/pollution/qbushplan.asp](http://www.nrdc.org/air/pollution/qbushplan.asp).

For more information on EPA, visit the web at [www.epa.gov](http://www.epa.gov).

For more information on environmental impact on loons, visit BioDiversity Research Institute at [www.briloon.org](http://www.briloon.org).

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