Mercury poses brain-damage risks
Coal-fired power plants work to reduce toxic emissions
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Despite decades of government attempts to erase it from household use, the poisonous metal mercury remains a threat to the environment and public health, especially to children and women of childbearing age.

As many as 600,000 babies may be born in the United States each year with irreversible brain damage because pregnant mothers ate mercury contaminated fish, according to the Environmental Protection Agency. Medical researchers are just beginning to explore the effect of mercury exposure on adults that leaves some in a disorienting "fish fog."

Nationwide, more than 8,000 lakes, rivers and bays are compromised by mercury's toxic effects.

Where is all the mercury coming from, and can something be done to stop it?

A partial answer can be found in the nearly 500 coal-burning power plants that supply about half the nation's electricity. The $298 billion electric utility industry is the nation's largest source of mercury air emissions and the latest target of federal and state clean air regulations.

U.S. mercury emissions have been cut nearly in half since 1990 as municipal, medical and hazardous waste incinerators closed or installed modern pollution controls.

Mercury also has been increasingly removed from products like thermometers and paint, batteries and toys. Most childhood vaccines no longer contain thimerosal, a preservative containing mercury. Many dentists have discontinued the use of metal amalgams to fill cavities because they contain mercury.

But mercury released from coal-burning power plants has remained steady, largely because there have been no federal limits on such emissions.

In 2005, approximately 500 electricity-generating power plants emitted 48.3 tons of mercury, an increase of about 1 percent since 2000, according to a USA Today analysis of the EPA's Toxics Release Inventory. Mercury emissions from all other industrial sources were down 33 percent collectively in the same period.

The electric power industry, which plans to build another 153 coal-fired plants by 2030, says it is behaving responsibly. It is retrofitting old plants and building new

ones with pollution control equipment that will remove much of the mercury, along with other pollutants, from flue gas.

"The industry recognizes that by combusting coal, there are things that get into the atmosphere," says Michael Rossler, manager of environmental programs for Edison Electric Institute, an industry trade association. "Our industry has always been very good about wanting to comply with federal and state regulations."

EPA slow to regulate

Two years ago, the EPA issued its first mercury regulation aimed at coal-fired plants — making the United States the first country to do so. The agency's new Clean Air Mercury Rule, effective in 2010, gives energy companies until 2018 to cut mercury emissions to an industrywide 15 tons.

That's not good enough for environmental advocacy groups. A coalition of more than a dozen states, several Native American tribes and environmental groups has filed suit in the U.S. Court of Appeals in Washington seeking to overturn the EPA rule and force the agency to get more mercury out of the air sooner.

James Pew, an attorney for Earthjustice, calls the EPA rule a "free pass for the polluters." It "means more mercury pollution, more waters made unsafe for fishing and more young children made susceptible to mercury contamination," he says.

EPA officials say deep, rapid mercury emissions cuts would be too costly to the power industry and would produce nominal health benefits. They say most mercury deposited in American lakes and streams comes from abroad, especially China.

The EPA mercury program also allows power plant operators to purchase mercury pollution credits from cleaner plants. Critics warn the trading system could let the worst polluters off the hook and foster "hot spots" with dangerously high levels of mercury.

Mercury and fish

The most common route of human exposure to mercury is through consuming fish. Microorganisms in lakes and streams convert mercury into methyl mercury that can accumulate at unhealthy levels in large fish.

When Luke Lindley arrived at Stanford University in the fall of 2002, he began eating three to four six-ounce cans of albacore tuna every day as an inexpensive, convenient and, he thought, healthful source of daily protein.

"It was just easier to pack a can of tuna and some bread and make a sandwich on campus," says Lindley, who is allergic to dairy products and nuts.

Then the symptoms began.

"I couldn't sleep," said Lindley, who grew up in Twin Falls, Idaho. "And when I did manage to get two or three hours of sleep, I would wake up exhausted to

the bone with no motivation."

In 2005, a lab test showed Lindley's hair had mercury concentrations 44 times the government's safety threshold. Lindley immediately eliminated tuna from his diet.

"It took a good eight to nine months before things started to improve," says Lindley, now a medical student at the University of Minnesota.

Lindley's story is typical of a largely unrecognized health threat that appears to be linked to mercury in seafood, says Dr. Jane Hightower, a San Francisco diagnostician and internist.

Hightower's 2003 research identified dozens of patients whose blood mercury levels exceeded the EPA's "safety" threshold of 5.8 micrograms of mercury per liter of blood.

Study participants with the highest blood mercury reported a diet rich in large predator species fish, such as swordfish and ahi tuna. They had no idea their favorite food was contributing to their illness, says Hightower, who coined the term "fish fog."

Fish and shellfish are not routinely screened for mercury, but officials with the $55 billion U.S. seafood industry insist their products are safe.

"There are no documented cases of mercury poisoning in the U.S. as a result of eating seafood of any kind," says Mary Anne Hansan, vice president of the U.S. Tuna Foundation.

A National Health and Nutrition Examination Survey conducted by the Centers for Disease Control and Prevention between 1999 and 2002 concluded that 6 percent of U.S. women had blood mercury levels above the EPA safety threshold. Twenty-two states disagree with the EPA's approach and are pursuing tougher mercury standards on their own.

Even if mercury emissions from power plants and other U.S. industrial sources are eliminated, American rivers, lakes and bays still would receive significant amounts of the metal from a global cloud of mercury fed by both human activity and natural processes.

But mercury's presence in the environment can be substantially reduced, scientists say.

"We can act globally by cleaning up our backyards and making a difference," says David Evers, a researcher with the Biodiversity Research Institute of Gorham, Maine.