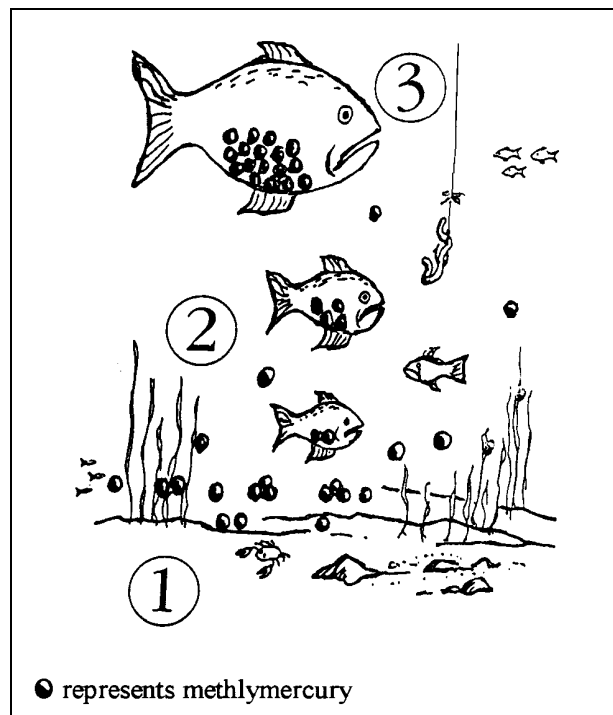


Mercury Still Rising:

A One-Year Assessment of Actions Taken to Reduce Mercury Emissions and Protect Americans from Mercury Exposure



by Michael Bender and Jane Melanie Williams
edited by Felice Stadler

December 1998

Mercury Still Rising

by Michael Bender
Mercury Policy Project
Jane Melanie Williams
California Communities Against Toxics

Edited by Felice Stadler
Clean Air Network

December 1998

Acknowledgments

The authors acknowledge the gracious support of the John Merck Fund, the Jennifer Altman Foundation, and the Starfire Fund for their continued support of important public policy work on mercury. A number of individuals have been instrumental in identifying and refining the underlying principles of the national mercury campaign: Michael Murray, National Wildlife Federation (Great Lakes); Eric Uram, Sierra Club (Great Lakes); Margaret Round and Martha Keating, consultants; Ted Schettler, Physicians for Social Responsibility (Boston); Marti Sinclair, Sierra Club (Ohio); Tom Goldtooth, Indigenous Environmental Network; and Jim Pew, Earthjustice Legal Defense Fund.

California Communities Against Toxics is a coalition of over 70 community groups in California working on pollution prevention, world peace, and environmental justice.

3813 50th Street West, Rosamond, CA, 93560
805-256-0968 • dcap@qnet.com

Clean Air Network is a six-year old national alliance of over 900 local, state, and national organizations working to empower and mobilize citizen groups by setting a national agenda for clean air and providing the resources, tools, and support necessary for action.

1200 New York Ave., NW, Suite 400, Washington, DC 20005
202-289-2429 • claimnet@igc.org; www.cleanair.net

Mercury Policy Project is a project of the Tides Center organized exclusively for educational purposes to reduce human and ecological exposures to mercury resulting from human activities and to advocate for virtual elimination of mercury emissions.

1420 North Street, Montpelier, VT 05602
802-223-9000 • mtbendervt@aol.com

Contents

Introduction.....	page 4
Health Threats and Debate Over Mercury’s Toxicity	page 5
Mercury Exposure	page 7
One Year Later—Mercury Still Rising	page 8
Right-to-Know: Who’s Warning the Public About Mercury in Marine Fish?	page 9
Mercury Emission Sources	page 11
Policy Initiatives—Federal Actions	page 12
Policy Initiatives—State Actions.....	page 13
Conclusion	page 14
Policy Recommendations	page 15

Mercury Still Rising:

A One-Year Assessment of Actions Taken to Reduce Mercury Emissions and Protect Americans from Mercury Exposure

"This is not a question of what it's going to cost to control mercury, but what it's going to cost all of us if we don't control mercury...This is an issue of who you are for: either you are for the mercury producers or you are for the children who could be injured by mercury."

Senator Patrick Leahy, April 1, 1998

SUMMARY

This report highlights the lack of substantial progress made toward the goal of the virtual elimination of man-made mercury emissions and significant reductions in human exposures to mercury in the United States. One year ago the U.S. Environmental Protection Agency released their Mercury Study Report to Congress, indicating widespread mercury exposure risks to 1.6 million American women and children. The major sources of this contamination are coal-fired power plants, waste incinerators, industrial and commercial boilers and furnaces, and chlorine producers. To date, warnings have been posted in 40 states and over 1,600 water bodies due to high mercury levels in fish that make them unsafe for human consumption. Since the release of the Mercury Study Report to Congress, the Clinton Administration has done little voluntarily to counter the environmental and public health threat posed by mercury emissions and exposures, but several states are taking a leadership role that can serve as a national model.

INTRODUCTION

Mercury is a toxic, persistent, bioaccumulative pollutant that can interfere with the neurological development of children exposed through fish consumption, and fetuses exposed through their mother's consumption of fish.¹ Human consumption advisories have been issued for thousands of water bodies² throughout the United States. Forty states have issued health advisories warning the public not to eat mercury-contaminated freshwater fish. Some states and the U.S. Food and Drug Administration (FDA) have developed publications warning the public about the consumption of certain marine species of fish due to high mercury levels.

Mercury is a metal element that exists as a silvery-white liquid at room temperature. It vaporizes readily and can stay suspended in the air for over a year. Mercury levels in the environment have been rising 2-5 fold over the last century and 1.5% per year since 1970³ due to industrial activities, especially from burning coal and mercury-containing waste.⁴ The U.S. Environmental Protection Agency (EPA) lists mercury as a hazardous air pollutant under Title III of the federal Clean Air Act.

Numerous studies show that mercury contamination of the environment is a result of atmospheric deposition from many sources, but the largest source of mercury in the environment is combustion of mercury-containing products and waste, and fuel from incinerators and power plants. Long range transport

and subsequent deposition of mercury is a significant source of the mercury contamination found in lakes, streams, rivers, and coastal waters.

Mercury deposition through rain and snow is a major contributor to the contamination of surface and ocean waters. Once deposited on water bodies, mercury makes its way into ocean, lake, and river sediments, where it's stored indefinitely and continues to be released back into the ecosystem for decades to come. A soon-to-be finalized national inventory of contaminated sediment sites and pollution sources will document that virtually every major lake and ocean harbor is experiencing sediment contamination problems.⁵

The properties and behavior of mercury depend upon its physical and chemical form. When elemental mercury is released into the air it interacts with ozone to form inorganic mercury which is highly soluble. In this form, mercury returns to the earth's surface in rain and snow and becomes transformed into organic mercury, or methylmercury, by bacteria which reside in oceans, lakes and rivers.

Methylation of mercury is a key step in the entrance of mercury into food chains, and can occur in the sediments and the water (both fresh and saltwater). Methylmercury bioaccumulates to a greater extent than other forms of mercury. Elimination of methylmercury in living organisms takes place at a very slow rate, resulting in tissue half-lives ranging from months to years. For example, the elimination of methylmercury from fish is so slow that long-term reductions in fish are usually due solely to the growth of the fish.

Given the persistence and toxicity of mercury, a national policy is needed to address all facets of this environmental health problem. The public (and especially women of childbearing age, pregnant women, young children, and subsistence fishers) needs to be adequately warned of the potential risks associated with eating too much freshwater and marine species of fish. Federal agencies should ensure that states are issuing protective consumption advisories and regularly testing a representative sample of lakes, streams, rivers, and estuaries, and taking added steps to ensure that the most vulnerable populations are aware of those advisories. Federal agencies also need to better inform the public about mercury in marine fish and adequately test a representative sample of fish before it enters the commercial market.

In lieu of any strong national leadership, individual states and regions have taken the lead in tackling this public health and ecological problem in a comprehensive manner. Their actions serve as a model for what other states should do, and what steps the Administration should take to fully protect the American people from continued mercury releases, contamination and exposures.

HEALTH THREATS AND THE DEBATE OVER MERCURY'S TOXICITY

People are most likely to be exposed to methylmercury through the consumption of fish. Mercury exposure can also take place through dental fillings (amalgam), the ingestion of water and other food sources. The risk of mercury inhalation occurs largely in the occupational setting. The exposure route of greatest concern, however, is through eating mercury-contaminated fish. As a result of cultural and economic factors, Native Americans and other minority and subsistence fisher populations are at higher risk from mercury exposure due to fish consumption practices.

Methylmercury is rapidly and extensively absorbed through the gastrointestinal tract. It easily penetrates the blood-brain and placental barriers in humans and animals. Methylmercury in the body is considered to be relatively stable, and has a relatively long biological half-life in humans with estimates ranging from 44 to 80 days. The human body eliminates mercury via feces, breast milk, hair, and urine.

Low-dose exposures to methylmercury are not expected to be carcinogenic but may affect hormone levels. Data indicate that methylmercury could increase the frequency of human egg and sperm mutations and is classified as a reproductive toxin, although the dose-response level for this effect is not clear. Methylmercury is also an endocrine disrupting chemical, but there is uncertainty about the levels at which this occurs.

Neurotoxicity is the effect that sparks the greatest concern when exposure occurs to the developing fetus and to young children. Most at risk from mercury are those who tend to eat a regular diet of fish, including 880,000 women of child-bearing age who could become pregnant, 85,000 pregnant women, and 665,000 children, according to the Mercury Study Report to Congress. Because children's systems are developing—including rapid changes in growth and development, immature body organs and tissues, and weaker immune systems in infancy—they are more susceptible to environmental threats than adults.

There are three characteristics of mercury toxicity which make it difficult to make a direct link between chronic mercury exposure in the general population and neurological effects in victims. These include: (1) A latency period before the manifestation of symptoms, which can be a few weeks to several months following exposure. During this time mercury is transformed from the methylated to the ionic form and bioaccumulates in brain tissue. (2) The difficulty in associating neurological damage in patients exposed to mercury several months earlier. (3) Inadequate information about mercury levels found in commercial fish and in fish caught by anglers and subsistence fishers, and the specific consumption rates of fresh water and marine fish.

The current EPA reference dose for methylmercury is based on neurologic effects witnessed in 81 Iraqi children whose mothers had eaten methylmercury-contaminated bread during pregnancy. Of greatest concern was that the infants born of mothers who had consumed the contaminated bread, particularly during the second trimester of pregnancy, showed nervous system damage even though the mother was only slightly affected.⁶

Considerable controversy exists over the amount of methylmercury that scientists and health risk assessors believe is safe for people to consume. Two studies have been completed within the past 18 months that indicate two different levels of effect on children exposed to mercury. The Seychelles Island study found that the ingestion of mercury by women and children at average levels normally found in marine and fresh water fish would not cause neurological impairment. Conversely, the Faroe Island study found that children who ate fish with mercury levels similar to those found in the U.S. suffered neurological damage, impairing their ability to concentrate, comprehend, and learn. This is a grave new finding and warrants application of the precautionary principle, especially when considering the development of future generations.

One study conducted in the Amazon on adults eating mercury-contaminated fish also found neurological damage at levels that mirror exposures experienced by some segments of the American population. A doubling of hair mercury levels from 10 ppm to 20 ppm resulted in a 50% rise in individuals' inability to perform alternating hand motions, indicating a dose-related increase in neurological damage. The adults tested had trouble with fine motor skills, manual dexterity, alternative hand motions, and restrictions in their visual fields.

A contentious policy debate is currently underway about which study to use when setting a reference dose to guide a host of governmental activities on mercury, from deciding which levels of fish are safe to eat to how clean a mercury-contaminated Superfund site ought to be. A recent meeting sponsored by the White House Office on Science and Policy with the three teams of scientists from the Amazon, Faroe, and

Seychelles studies underscored numerous remaining concerns about our understanding of how mercury exposure may affect public health, including:

1. The risk from episodic exposures (eating one highly contaminated fish while pregnant) remain unknown, but the potential impact to the unborn fetus could be severe.
2. The impact of chronic mercury exposure to subsistence fishers who are consuming hundreds of pounds of fish a year (such as Alaskan and Hawaiian natives) remains of considerable concern.
3. Ethnic differences in methylmercury responses are not clearly understood.
4. Understandings of the subtle, but significant effects of methylmercury exposure on human potential (the ability to comprehend, remember, and perform higher level cognitive functions) are not well understood. The current ability to measure these effects with the crude tools available may not allow the certainty of ever knowing all the effects of chronic exposure on human development.

Given these uncertainties, policy makers are faced with making a serious decision. Should they set a policy *now* to prevent further contamination and exposure, or allow ongoing scientific uncertainties to justify continued delay to do what's ultimately necessary—namely, to eliminate, to the greatest extent possible, man-made mercury releases into our environment and promote significant reductions in human exposures to mercury?

MERCURY EXPOSURE

Most at risk from mercury poisoning are over 1.6 million women of childbearing age, pregnant women, and children in the continental U.S. Also clearly at risk are people who consume more than 3.5 ounces (100 grams) of fish per day. Native American tribes, subsistence fishers, recreational anglers, and people who have a preference for eating large amounts of fish are all at risk from consuming mercury-contaminated fish. The EPA's Mercury Study Report to Congress neglects to include populations from Alaska and Hawaii in their estimates of those at risk. In remote villages in Alaska, a study reported fish consumption rates of 600 pounds per year.⁷ So, the total number of people at risk could be much higher than stated in the EPA Report.

Forty states have issued health advisories, warning the public about limiting or restricting their consumption of mercury-tainted freshwater fish. Advisories for mercury increased 86% from 1993 to 1996 (899 to 1,675), according to EPA. The majority of new advisories have been issued in four states: Wisconsin (153, including 99 by the Chippewa Tribes), Indiana (108), Minnesota (50), and Massachusetts (17), according to EPA. FDA is charged with testing and issuing guidance about high levels of mercury in commercially available (and primarily) marine fish.

One Gram of Mercury	
Mercury deposition at a rate of one gram per year will contaminate a twenty acre lake and trigger fish consumption advisories.	
For comparison:	
<u>Item</u>	<u>Mercury Amt.</u>
One teaspoon of mercury	70 grams
One thermostat	3 grams
One electrical switch	3.5 grams
100 fluorescent lamps	4 grams

Mercury Poisoning Due to Consumption of Marine Fish

The hazards posed by eating mercury-contaminated fish are well documented, however, it is impossible to know whether the mercury levels in either freshwater or marine species of fish are safe unless they are tested regularly. Therefore, state health officials generally warn the public to err on the side of caution

when consuming freshwater fish caught in-state, but have also expressed concerns about mercury in commercially sold fish.

In March 1994, the Wisconsin Division of Health was contacted by a man who reported that he and his family had been exposed to mercury poisoning due to the consumption of three to four fish meals per week. Symptoms included sleep disturbances and difficulty concentrating. He was especially concerned about the health of his 2 1/2 year old son. Samples of sea bass indicated mercury concentrations well below the FDA "guidance level" for commercial fish, but high enough to result in elevated blood and hair samples in the family.⁸

Wisconsin health officials state in their findings that FDA should provide consumption frequency advice to consumers of commercial fish and also that FDA should significantly "... lower the concentration of mercury that is permitted in commercial fish." In its findings, the Wisconsin Department of Health concluded:

"This study demonstrates the inability of food safety regulations that are based on average consumption rates and body weights to protect individuals whose dietary habits and consumption rates fall outside the normal range. To prevent public health risks posed by methylmercury contaminated seafood and fish, federal and state regulatory agencies may need to revise existing guidelines to decrease allowable mercury levels in these products, or initiate educational campaigns to increase public awareness of the need to limit consumption of certain seafood items".⁹

ONE YEAR LATER—MERCURY STILL RISING

It has been one year since EPA released its long-delayed, 1,500 page Mercury Study Report to Congress. Since that time, many articles have been published documenting widespread mercury contamination throughout our society, from our schools to the fish we eat to the farthest reaches of the earth.

High Mercury Levels in the Ocean and in Marine Species of Fish

The marine environment has often been overlooked when considering mercury contamination, although the primary exposure route for methylmercury in humans is through the consumption of marine species of fish. On average, Americans consume about 16 pounds of seafood per person compared to around 3-4 pounds of recreationally caught fish.¹⁰ At the same time, reports indicate that anthropogenic mercury deposition into the ocean has tripled over the last century.¹¹ Public health warnings and guidelines have been issued in the U.S. and Canada for swordfish, shark, large tuna, seabass, cod, canned tuna and king mackerel.

Mercury Levels Increase in the Arctic

Mercury pollution is increasing in the Arctic at a much faster rate than predicted a decade ago. Each Spring, a "toxic rain of mercury" falls on the Arctic, according to Environment Canada. Just last year, snow contained two nanograms of mercury per litre of water, the average amount found in precipitation. Over the past year, mercury levels have steadily increased and reached 50 nanograms in May 1998.¹² Researchers indicate that the pattern mirrors the timing of ozone depletion, suggesting there may be a strong connection between these two environmental problems.¹³

Mercury Levels in Loons and Eagles Affect Reproductive Rates

High levels of mercury in loons and other birds impact reproductive rates. As one goes from west to east, there is 3 times more mercury in loon blood samples taken in the Great Lakes, 4 times more in the

Northeast and 6 times more in the Canadian Maritimes.¹⁴ Environment Canada recently released a report showing a strong relationship between the amount of mercury in birds and how many young they are able to produce. They now believe that high blood mercury levels are affecting the loon's ability to successfully nest and raise their young.¹⁵ Elevated levels of mercury in Maine's eagles have been associated with reduced reproduction rates. Mercury concentrations over 0.5 parts per million in some eagle eggs were sufficient to prevent chicks from hatching.¹⁶

Mercury in Schools: Costly Consequences

Recent mercury spills in public schools across the U.S. have resulted in acute exposures to children and costly clean-ups, illustrating the need to phase out all mercury uses and clear out old quantities. In March 1998, officials in a Vermont community school found mercury spilled in one of its bathrooms. Since the mercury went down a floor drain, the floor had to be removed before the mercury could be cleaned up. Total clean-up costs amounted to approximately \$250,000.¹⁷ Throughout the country, numerous mercury spillage incidents were reported in schools and in homes. Many states are now considering plans to phase out mercury uses in schools and clean up leftover quantities of mercury.

RIGHT-TO-KNOW: WHO'S WARNING THE PUBLIC ABOUT MERCURY IN MARINE FISH?

Federal Consumption Advisories

The Food and Drug Administration is charged with protecting consumers from mercury in commercially caught fish. However, FDA's practices reveal a lack of diligence to adequately and effectively inform the public about the risk of eating certain mercury-contaminated fish. Although FDA is aware that certain frequently consumed marine fish contain high levels of mercury, they appear to be doing little to inform the public (and especially high risk populations) about the potential risks posed by consuming these fish.

FDA acknowledges that shark, swordfish, yellow fin and blue fin tuna that reach the marketplace or are served in restaurants frequently exceed the regulatory limit, and should be consumed infrequently.¹⁸ FDA listed methylmercury as "a potential safety hazard" for bonito, halibut, Spanish mackerel, king mackerel, marlin, shark, swordfish and blue fin tuna in 1994.¹⁹

The selection of these species was based on historical methylmercury levels found in fish consumed in the U.S. that exceed the FDA action level of 1 ppm. Testing by the State of Florida in 1991 found that approximately two-thirds of the shark samples exceeded safe levels for mercury set by FDA.²⁰ (Shark can have mercury concentrations of up to 9 ppm.) Upwards of half of the swordfish sold today exceeds the FDA action level, with swordfish having, on average, 1.05 ppm of mercury. According to Greg Kramer of the FDA Office of Seafood, "Sampling individual (sword)fish would take half off the market."²¹

Methylmercury poisoning from swordfish is a great enough risk that a 1991 National Academy of Sciences report recommended that couples who intend to have children in the near future should avoid eating this fish species.²² Many doctors also warn women of childbearing age and pregnant women to not eat any swordfish or shark due to mercury levels.²³ And, according to a 1998 Canadian Food Inspection Agency advisory, daily consumption by a typical woman of as little as 60 grams (about 2.5 ounces) of fresh tuna, cod, or sea bass imported from the U.S. could exceed the safe levels set for mercury exposure.²⁴

One FDA publication advises pregnant women and women of childbearing age (since the first trimester of pregnancy appears to be the critical period of exposure for the fetus) to limit their consumption of shark

and swordfish to no more than one serving per month.²⁵ The publication also warns the general population to limit their consumption of fish containing 1 ppm of mercury to 7 ounces per week and to eat only 14 ounces of fish with average levels of 0.5 ppm each week. However, FDA also states that this does not mean that it is safe to "regularly and frequently" eat fish that contain 1 ppm methylmercury and acknowledges that for high risk populations, consumption presents increased risks.²⁶

Unfortunately, the only place FDA advises the public about high levels of mercury in marine fish is through its publications, which are not adequately distributed (if at all) to the public. While FDA clearly acknowledges the risks posed by mercury levels in seafood, they have not developed an effective consumer information outreach program or even a rudimentary pamphlet for doctors and pediatricians to reference and distribute to women of childbearing age, pregnant and nursing women, and their children.

State Fish Consumption Advisories

Unfortunately, most states are reluctant to issue consumption advisories about marine fish—even when mercury levels can be double or triple those of freshwater fish caught in the state—because providing guidance about commercial (primarily marine) fish is viewed as an FDA responsibility. States that provide fish consumption advisories due to high levels of mercury in certain ocean fish include New Jersey, Florida, and Minnesota.

The State of New Jersey Health Department warns children under seven not to eat any swordfish or shark and cautions that pregnant women should only “eat up to eight ounces of canned tuna each week” provided that no other mercury-contaminated fish is consumed at the same time.²⁷ Minnesota also warns pregnant women not to eat swordfish or shark and to limit consumption of canned tuna.²⁸ Florida warns pregnant women and children to eat shark no more than once per month and to not consume King Mackerel, which has high mercury mercury levels.²⁹

Although states are conducting more outreach to the public about fish consumption advisories than FDA, it is clear that even state warnings are not nearly as effective as they should be. According to a recent study in the Great Lakes, about half of sport fish eaters were aware of a state health advisory.³⁰ A disproportionate amount of these sport fish eaters were minorities, who ate 1.5 sport fish meals for every 1 eaten by whites. Men were twice as likely to know about the advisories, and Caucasians were 4 times more likely to know than minorities. Among minorities of both genders, awareness was about 22%. The study concludes that fish advisories are not reaching the populations who are more at risk—women and minorities—and recommends targeted communication and outreach.

MERCURY EMISSION SOURCES

It's important to note that of the approximately 20 source categories (listed below) identified by EPA as being the primary emitters of mercury, the agency has issued national standards limiting mercury emissions for only four of these sources: municipal and medical waste incinerators, sewage sludge incinerators, and chlor alkali manufacturing facilities. Unfortunately, these standards have been extraordinarily weak. Environmentalists have sued EPA over its medical waste standards and the Federal Advisory Committee on children's health is reviewing emission limits for chlor alkali facilities due to concerns that the current regulations allow excess mercury emissions.

EPA's Estimated Sources of Mercury

<u>Sources</u>	<u>Emissions</u>	<u>Percent</u>	<u># of Facilities</u>
Coal-fired Power Plants	52 tons	33.54%	1043
Municipal Waste Incinerators	30 tons	18.73%	105
Commercial/Industrial Boilers	29 tons	18.35%	~2000
Medical Waste Incinerators	16 tons	10.12%	~1500
Hazardous Waste Incinerators	7 tons*	4.43%	
Chlor-alkali manufacturing	7.14 tons	4.51%	14
Portland Cement	4.85 tons	3.07%	112
Other Manufacturing Sources	3.6 tons	2.28%	
Residential Boilers	3.5 tons	2.21%	
Area sources	3.4 tons	2.15%	
Pulp and Paper Manufacturing	1.9 tons	1.2%	
Geothermal Power	1.4 tons	0.9%	
Other Combustion	1.2 tons	0.7%	
Instrument Manufacturing	0.5 tons	0.3%	
Secondary mercury production	0.4 tons	0.2%	
Carbon Black	0.3 tons	0.2%	
Electrical Apparatus	0.3 tons	0.2%	
Primary Copper Production	0.1 tons	0.06%	
Primary lead production	0.1 tons	0.06%	3
Lime Manufacturing	0.1 tons	0.06%	
Other sources	6.4 tons	4.0%	

Source: Final Mercury Study Report to Congress [EPA-452/R-96-001a] Dec 1997

One source not included in EPA's estimates are petroleum refineries. Mercury is present in crude oil, so refineries likely release mercury. However, no monitoring has been done on this source, and it does not appear EPA is taking steps to fill this significant data gap.

* Over 600,000 tons of Hg bearing waste is burned in these units; this number is suspect.

Efforts to have mercury emitters quantify their mercury emissions have also proved unfruitful. Advocates on the Federal Advisory Committee for the Industrial Combustion Coordinated Rulemaking recommended that mercury be included in test plans for refineries, industrial boilers, on-site incinerators, and combustion

units burning coal or oil. They have also recommended that mercury emission limits be established for these sources. So far, these recommendations have been rejected by EPA.

POLICY INITIATIVES

Despite multiple opportunities, the Clinton Administration has been slow to take any decisive action on reducing mercury emissions or exposures. For instance, a petition to EPA requesting that mercury-containing equipment be added to the universal waste rule (which would foster their diversion from municipal and medical waste incinerators) has languished at the agency for 2 years. Even worse, an EPA proposed rule to add fluorescent lamps to the universal waste rule (also to keep them out of incinerators) has been constantly delayed in draft form for over 5 years. The most aggressive initiatives to develop stringent emission limits for mercury sources, label mercury-containing products and reduce exposure to mercury-contaminated fish are occurring at the state level.

FEDERAL ACTIONS

National Mercury Legislation

Senator Patrick Leahy (D-VT) introduced the "Omnibus Mercury Emissions Reduction Act of 1998" into the U.S. Senate on April 1, 1998 given the lack of a national control strategy to reduce mercury emissions into the environment. When he introduced the bill, Senator Leahy made the following observations:

"This is not a question of what it's going to cost to control mercury, but what it's going to cost all of us if we don't control mercury...This is an issue of who you are for: either you are for the mercury producers or you are for the children who could be injured by mercury."³¹

The bill, S.1915 (and a companion bill, H.R.3791, introduced in the U.S. House of Representatives by Representative Tom Allen, D-ME) calls for significant reductions in mercury emissions from coal-fired power plants; municipal, sludge, hazardous waste and medical waste incinerators; cement factories and chemical manufacturing plants. The bill also calls for the labeling of products to alert consumers to keep them out of the trash.

EPA/American Hospital Association Memorandum of Understanding

The American Hospital Association (AHA) and EPA signed an MOU in the summer 1998 that sets goals for mercury phase outs in the healthcare sector and a goal for reducing overall waste. Under the agreement, all mercury is to be phased out of hospitals by the year 2005, and 50% of the waste generated by hospitals is to be reduced by the year 2007.³² A task force comprised of AHA members, EPA staff and members of Health Care Without Harm (a national coalition of organizations concerned about pollution caused by the health care industry) have formed to implement the MOU. (For more information about this effort, contact HCWH at (703) 237-2249 or send an e-mail to cbrody@essential.org.) It is a voluntary agreement, but is by far the most far-reaching public-private initiative established to date to address mercury releases from one of the largest mercury emitters.

Increasing the Public's Right-to-Know About Mercury Emissions

Starting in January, 1999, coal-fired power plants nationwide will have to monitor and report their mercury emissions. Coal-fired plants are the largest and, as of yet, unregulated source of mercury emissions in the U.S. The first set of reports will be submitted to EPA in April 1999, with final reports submitted in early

2000. This information will provide the tools to better estimate the total amount of mercury being released by coal-fired power plants; improve the understanding of the impact these mercury emissions have on local communities and ecosystems; refine mercury transport models; and develop effective control strategies. EPA intends to use these data to help decide in the year 2000 what form of regulatory action it should take to address mercury emissions from coal-fired power plants.

Also, EPA is in the process of drafting a proposed rule to lower the reporting thresholds for mercury and other persistent bioaccumulative toxics (PBTs) under the Toxic Release Inventory program. It appears that EPA will propose a 10 pound emission threshold for mercury. This new reporting threshold will provide a more complete inventory of the mercury emission sources in the U.S. However, it is unlikely to capture the thousands of small industrial and commercial boilers that collectively constitute the third largest source of mercury emissions in the U.S.

EPA Mercury Action Plan

In mid-November, EPA released a draft mercury action plan as part of its PBT strategy that presents the Agency's approach to reduce mercury releases by 50% by 2006.³³ The EPA Plan relies heavily on the "MACT" (maximum achievable control technology) standards to achieve the agency's mercury emission reduction goals. Public health advocates and states believe that the MACT standards are needlessly weak and should be made much more stringent to truly reduce mercury emissions. And while the draft Plan calls for a 50% reduction in mercury releases by 2006, it fails to lay out a realistic strategy and timeline. Without significant revisions, it is doubtful that the action plan will bring about the kinds of reductions needed to adequately curb mercury contamination.

STATE ACTIONS

New England Governors/Eastern Canadian Premiers Mercury Action Plan

In recognition of the serious health risk that mercury poses, the New England governors and the Eastern Canadian premiers (NEG/ECP) adopted in June 1998 the strongest Mercury Action Plan in the Western Hemisphere.³⁴ The NEG/ECP Plan sets a goal for the virtual elimination of mercury from human activities and calls for a 50% reduction in mercury emissions by 2003.

The NEG/ECP Plan's 5 year goal is 3 full years ahead of the 50% national reduction goal set by EPA. The Plan targets cuts in mercury releases from municipal, sludge and medical waste incinerators, and coal-fired utility and industrial boilers; promotes source reduction, outreach and education (especially to high risk populations); and supports manufacturer take-back and labeling requirements to help keep mercury-containing products and devices out of municipal and industrial trash.

Mercury Take Back Legislation and Stricter Emission Standards for Incinerators

In 1998, both Vermont and Maine passed far-reaching mercury legislation that has laid the ground work for significant mercury reductions in the Northeast.³⁵ Vermont's mercury reduction act requires manufacturers to label mercury-containing products sold in the state, mandates their collection and also bans their disposal in the municipal waste stream. Maine's law requires a report submitted to the Legislature by January 1, 1999 outlining a similar initiative; the Department of Environmental Protection's draft report recommends requiring manufacturers to label mercury-containing products so they can be kept out of the municipal solid waste stream. Modeled closely after Minnesota's mercury statutes, the Maine report also assigns product manufacturers with the "primary responsibility" of diverting mercury-containing products from the solid waste stream.

Manufacturer take back programs for mercury-containing products make sense for a number of reasons, according to Ned Sullivan, Commissioner of the Maine Department of Environmental Protection:

"There is a clear preference in our society for market solutions over government programs. Take back programs that shift responsibility for post-consumer product management from the government to the manufacturer bring market forces to bear on the problem. This will drive innovation in product design, in recycling technologies, and in collection systems. More importantly, I think it will give any manufacturers an incentive to eliminate uses of mercury altogether. That market incentive and ingenuity are missing in a system that relies solely on government subsidized waste collection."³⁶

Following in the footsteps of stricter municipal waste incinerator emission standards set in New Jersey (at 28 micrograms per dry standard cubic meter), mercury laws in both Vermont and Maine require waste incinerators to install new pollution control devices to drastically cut mercury releases well beyond federal standards. Massachusetts has also set stringent reduction requirements for municipal waste incinerators that go beyond the New Jersey standards by mandating both the 0.28 emissions standard along with source separation requirements for mercury and other hazardous substances, and consideration of the cumulative impacts of incinerator pollutants on communities.³⁷

Adhering to the recent adoption of the Mercury Action Plan, Northeastern states are also addressing a number of other mercury reduction initiatives. Maine's law mandates significant reductions in mercury emissions from chlor-alkali plants. Legislation in Vermont establishes an on-going state advisory committee to comprehensively address the broader mercury pollution problems, including reducing both mercury emissions and exposures. Finally, a Regional Mercury Task Force has been formed between Northeastern states and eastern Canadian provinces to work together towards solving a common problem, while promoting solutions at the national and international levels.

CONCLUSION

Despite widespread evidence of mercury contamination and rising numbers of fish consumption advisories, the Clinton Administration has moved slowly to reduce the threat of mercury exposure to the American public, and has taken little voluntary action to cease releases of mercury into our environment. Actions that have been taken by the EPA (the information collection effort for coal-fired power plants, the Urban Air Toxics Strategy, and the MACT standards for medical waste incinerators) have been issued because of court ordered deadline suits imposed under the Clean Air Act. The current EPA Mercury Action Plan relies almost exclusively on end-of-the-pipe strategies to reduce mercury emissions to the environment instead of taking aggressive actions to cease the burning of mercury bearing fuels, products and wastes.

However, some voluntary mercury initiatives appear to be moving forward. Adopted first in 1978 by the U.S. and Canada and reconfirmed in 1997, the "Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes" renewed a bi-national commitment to the virtual elimination of mercury from all human sources.³⁸ The MOU between EPA and the American Hospital Association to work towards the elimination of mercury emissions over the next 5 years demonstrates the power of stakeholders to come together over a common goal, to follow the precautionary principle, and to abide by the "first, do no harm," approach to health care.

Finally, commitments by the Northeastern states and Eastern Canadian provinces to the virtual elimination goal for mercury are promising signs that are being followed up by significant actions. State and regional partnerships are going much farther and faster to deal with the threat posed by mercury pollution than at the federal level. The New England Governor/Eastern Canadian Premiers Mercury Action Plan is the best example of actions that will move this country towards significantly reducing human exposures to mercury and the virtual elimination goal for mercury from human activities.

POLICY RECOMMENDATIONS

Take Steps to Reach Goal of Virtual Elimination of Mercury Emissions

1. Ban the disposal of mercury-containing material into municipal waste streams or incinerators. Implement projects for source reduction, separation, and recycling programs for mercury-containing products. Establish a national extended producer responsibility program (i.e., manufacturer take-back programs) for all mercury-containing products. Move toward a phase-out of mercury-containing products.
2. Develop aggressive mercury reduction emission policies for all fossil-fuel combustion sources, including power plants and commercial and industrial boilers. Promote energy efficiency to reduce fuel combustion. Promote the use of renewable resources to reduce reliance on fossil fuels that contain mercury.
3. Establish strong MACT standards for all known mercury sources; require monitoring for suspected mercury sources prior to developing MACT standards for those sources. Require all mercury-using industries to report their annual mercury mass balance, e.g., mercury consumption and all mercury releases.

Protect the Public by Increasing Right-to-Know About Mercury Levels in Fish

1. All federal agencies should adopt reference values for mercury contaminants that are fully protective of the most sensitive populations, wildlife and the environment.³⁹
2. Adequate testing and surveillance should be conducted by states, EPA and FDA to provide representative sampling of those most often consumed ocean and freshwater fish and to better advise the public (especially sensitive populations) about exposure risks from mercury.⁴⁰
3. In coordination with state health departments, FDA should initiate an aggressive process for informing the public about mercury contamination in marine fish (such as consumer warnings about swordfish and shark) by developing and implementing effective consumer information and outreach program.
4. FDA and other federal agencies should make all test results and findings related to mercury contaminants in fish and the marine environment readily available to the public, including posting data on the Internet and developing publications that can be widely distributed by health care professionals and others with more direct access to sensitive populations.⁴¹

Endnotes

- ¹ EPA Policy Statement and Action Plan for Mercury (Draft), November 12, 1997, page 1.
- ² This includes all the states that have statewide fish advisories, Maine alone has hundreds of water bodies under advisories.
- ³ Draft Report: Case Study on Mercury to the Secretariat of the Commission on Environmental Cooperation, June 10, 1997
- ⁴ Mercury Study Report to Congress, U.S. EPA June 1996 (Draft)
- ⁵ National Sediment Quality Survey: A Report to Congress on the Extent and Severity of Sediment Contamination in Surface Waters of the United States (first draft) U.S. EPA
- ⁶ Mercury Study Report to Congress, Executive Summary, [EPA-452/R-96-001a], June 1996, page 3-17
- ⁷ Personal communication of Marti Sinclair, Sierra Club, with Alaska Department of Wildlife official, 1995
- ⁸ Knobeloch, L., Ziarnik, M., Anderson, H., Dodson, V., "Imported Seabass as a Source of Mercury Exposure; A Wisconsin Case Study," Environmental Health Perspective, Volume 103, Number 6, June 1995, p.604
- ⁹ Ibid., p. 606
- ¹⁰ Miller, R., U.S. Food and Drug Administration, "Getting Hooked on Seafood: Reeling in a Safe and Healthful Catch," June 1991
- ¹¹ Mason, R., Fitzgerald, W., Morel, F., "The biogeochemical cycling of elemental mercury: anthropogenic influences," Geochimica et Cosmochimica Acta, Volume 58, No.15, pp. 3191-3198, Elsevier Science LTD
- ¹² Bourie, M., "Environment: Global Warming Endangers Arctic," InterPress Service, Oct.14, 1998
- ¹³ "Canadians plot toxic rainfall in Arctic," ENN Daily News, June 19, 1997
- ¹⁴ "Tiny mercury levels pack a huge wallop," The Globe and Mail, April 8, 1997
- ¹⁵ "Mercury affecting the reproduction of Maritime Loons," Environment Canada Atlantic Region press release, September 21, 1998
- ¹⁶ "Mercury in Maine," Land and Water Resources Council 1997 Annual Report, Submitted to the Joint Standing Committee on Natural Resources, p. 16, January 28, 1998
- ¹⁷ Personal communication of Michael Bender with Bill Bress, Vermont State Toxicologist, November 21, 1998
- ¹⁸ "Methylmercury in Sport-Caught Fish, How Does Methylmercury Affect Health?", Oregon Health Division Fact Sheet, February 3, 1997
- ¹⁹ "Fish and Fishing Products Hazards and Controls Guide (draft)," U.S. FDA Center for Food Safety and Applied Nutrition, February 16, 1994
- ²⁰ "HRS and Department of Agriculture Issue Health Advisory for Marine Fish," press release, May 13, 1991
- ²¹ Personal communication of Michael Bender with Greg Kramer, U.S. FDA Office of Seafood, November 2, 1998
- ²² Miller, R., Getting Hooked on Seafood: Reeling in a Safe and Healthful Catch, U.S. Food and Drug Administration, 1991
- ²³ "Mercury in fish, Concerns shouldn't dampen your appetite," Mayo Foundation for Medical Education and Research, 1998
- ²⁴ "New guidelines target mercury hazard, tuna, cod, sea bass pose risk for some women, children as daily limit lowered," Globe and Mail, April 20, 1998
- ²⁵ "Mercury in Fish: Cause for Concern?", Judith E. Foulke, U.S. FDA, 1994
- ²⁶ Ibid.
- ²⁷ "A Woman's Guide To Eating Fish and Seafood," N.J. Department of Health and Senior Services Fact Sheet, January 20, 1998
- ²⁸ Personal communication of Michael Bender with Hilary Carpenter, MN Health Department, November 1998
- ²⁹ "Health Advisories for King Mackerel," Florida Department of Health and Rehabilitative Services, June 4, 1996
- ³⁰ Tilden, et al, Wisconsin Bureau of Health, "Health Advisories for Consumers of Great Lakes Sport Fish: Is the Message Being Received? (draft), 1997
- ³¹ "Leahy Legislation Reduces Mercury," Rutland Herald, April 2, 1998
- ³² "U.S. Environmental Protection Agency and AHA Enter Partnership to Reduce Hospital Waste," American Hospital Association press release, June 24, 1998
- ³³ "EPA Action Plan for Mercury," Draft--November 16, 1998

³⁴ "Mercury Action Plan," Prepared by The Committee on the Environment of The Conference of New England Governors and Eastern Canadian Premiers, June 1998

³⁵ "An Act Relating to Manufacturer Responsibility to Establish Collection Systems For Waste Mercury-Added Consumer Products, Vermont Act No.151, May 1998 and "An Act to Reduce Mercury Use and Emissions," Maine S.P.856-L.D.2269, July, 1998

³⁶ Personal communication of Michael Bender with Ned Sullivan, Commissioner, ME Department of Environmental Protection, December 4, 1998

³⁷ "Municipal Waste Combustor Regulation," MA Department of Environmental Protection, Bureau of Waste Prevention, Division of Air Quality Control, July, 1998

³⁸ The Great Lakes Binational Toxics Strategy, April 7, 1997

³⁹ "Contaminated Catch, The Public Health Threat from Toxics in Fish," Executive Summary, Natural Resources Defense Council, April 1998

⁴⁰ Ibid.

⁴¹ Ibid.