

MERC CONCERN



MERCURY AWARENESS FOR MICHIGAN CITIZENS

Mercury has been recognized as one of the primary pollutants of concern for Michigan. Even a very small amount of mercury in the environment can be converted to a form that builds up in the muscle tissue of fish and may ultimately reach your dinner table. Mercury contamination has resulted in the Michigan Department of Community Health (MDCH) issuing state-wide fish consumption advisories. Most of the mercury in the lakes was deposited through the atmosphere by rain, snow or dirt particles. Mercury poisoning can cause central nervous system, kidney and liver damage in humans, and impaired child development.

Working together, however, there are many things you can do to help protect the environment and reduce your potential exposure to mercury. There has already been a significant reduction of mercury from certain industrial sources and in products such as batteries, but despite these efforts

numerous uses of mercury still exist. This brochure will help you identify sources of mercury, products containing mercury and learn how to find safe, cost-effective ways to prevent mercury pollution.

What is Mercury?

Mercury is a naturally occurring toxic trace element found in air, water, soil and rocks. Mercury, a silvery colored liquid, is a member of a group of elements called heavy metals. It is also used in thousands of household and commercial products and industrial processes. Mercury can be converted in the environment by microorganisms into the organic form, methylmercury, which is especially toxic.

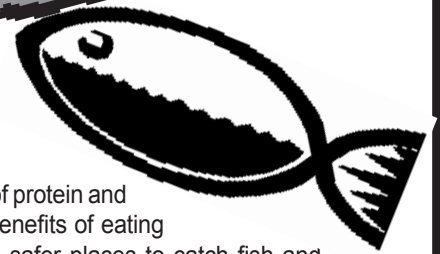




WHY SHOULD I BE CONCERNED?

- Mercury is toxic to the nervous system. Humans can be exposed to mercury in occupational, accidental or environmental settings. The primary environmental route of exposure to methylmercury is from eating contaminated fish.
- The unborn children are most at risk to methylmercury poisoning, so expectant mothers should follow the MDCH's fish consumption advisories (included in this brochure).
- Occupational and accidental exposure often results from inhaling elemental mercury vapors. This short-term (high mercury concentration) exposure can result in nausea, shortness of breath, pneumonitis and bronchitis.
Four members of a Michigan family died from inhaling mercury vapors released by home smelting mercury amalgams to recover the silver.
- Exposure at extreme levels of mercury can result in shakiness, tremors, numbness in the fingers and toes, loss of muscle control, memory loss and kidney disease in children and adults.
- Children playing with mercury can be seriously poisoned by breathing invisible vapors released to the air even at room temperature from mercury spilled in carpeting, furniture or other surfaces. Children are most sensitive to mercury poisoning during early development to age six.

FISH CONSUMPTION



- Don't stop eating fish.** It is a good source of protein and low in saturated fat. You can still get the benefits of eating fish by wisely choosing safer types of fish, safer places to catch fish and using moderation in how much you eat. Small pan fish, such as perch, rock bass and crappie (if less than 9 inches) and bluegill and sunfish of all sizes are very low in methylmercury.
- While consuming fish does provide health benefits, the most likely exposure to methylmercury is from eating fish. The population most at risk to methylmercury poisoning is the unborn child (if the expectant mother eats large amounts of fish).
- Methylmercury is converted from mercury in the environment and is highly bioaccumulative. Unlike PCBs, dioxin or other fish contaminants, mercury does not concentrate in fat, and therefore, trimming the fat or grilling will not significantly reduce mercury levels in the food.
- Since 1988, the Michigan Department of Community Health (MDCH) has issued a fish consumption advisory for all of Michigan's 11,000 inland lakes as a result of mercury contaminated fish being found in many of the lakes sampled. The advisory includes walleye, pike and bass species as well as some of the larger sizes of perch and crappie (over 9 inches). Refer to the current Michigan Fish Advisory.
- MDCH advises that the general public only eat one meal per week and that nursing mothers, pregnant women, women who intend to have children, and children under the age of 15 should not eat more than one meal per month of these species. The trigger limit MDCH uses for issuing fish consumption advisories for mercury is 0.5 parts per million (ppm).
- There are "do not eat" advisories in place for select fish species from several water bodies in Michigan including Deer Lake, Michigamme River System, Round Lake, Chaney Lake, Langford Lake and West Branch Lake. (The mercury concentration for the "do not eat" trigger limit is 1.5 ppm. [Michigan Fish Advisory](#).)
- At least 40 states have fish consumption advisories in place for mercury for certain lakes and streams in their state.
- Mercury is toxic to most wildlife. Wildlife species including loons, otter and mink that feed heavily on fish can be much more at risk to methylmercury poisoning than humans.
- Certain types of fish can often contain higher levels of methylmercury including larger, older predatory fish, such as walleye, bass and pike.
- Exposure to methylmercury can also occur from eating certain ocean fish. MDCH advises that nursing mothers, pregnant women, women who intend to have children, and children under the age of 15 should NOT eat any swordfish or shark.

CALL THE MICHIGAN DEPARTMENT OF COMMUNITY HEALTH:

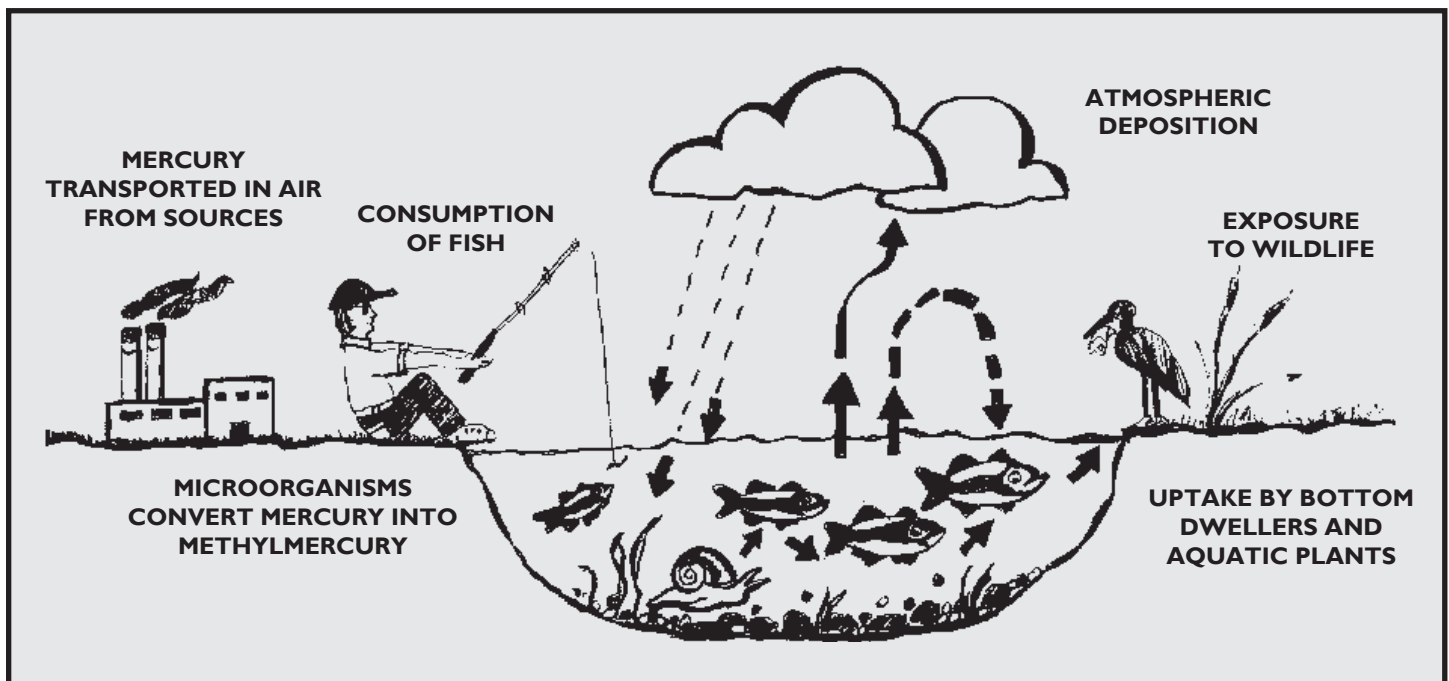
1-800-MI-TOXIC



HUMAN RELATED ACTIVITIES THAT CAN RELEASE MERCURY INTO THE ENVIRONMENT

While emissions of mercury can occur from both natural and man-made sources, man-made sources are estimated to account for the majority of all emissions. Some natural mercury emissions will always occur from the soil or forest fires and are not the focus of Michigan's mercury reduction efforts. The following represent sources of mercury to the environment that can be controlled.

- cement & lime kilns
- coal and oil burning
- copper smelting
- crematories
- dental amalgam preparation/disposal
- dwelling demolition (thermostats & switches)
- electrical product manufacturing & disposal (switches, fluorescent lights, some headlights & batteries)
- evaporation of mercury from landfills
- garbage incinerators
- hazardous waste incinerators
- industrial wastewater discharge
- laboratories use and waste
- medical waste incinerators
- petroleum refining
- residential boilers
- wastewater treatment plants & sewage
- wood burning



Mercury can evaporate quickly and can be released into the air when mercury containing products are either broken or incinerated as well as when coal or oil which contain mercury are burned for fuel. Mercury can also be discharged through municipal and industrial wastewater. Once mercury is released into the environment, it circulates and can be converted by microorganisms into methylmercury, the most toxic form. Methylmercury bioaccumulates in the flesh of fish (not the fat) and can build up or biomagnifies up the food chain and can pose a health risk to humans and wildlife that consume large quantities of mercury contaminated fish (see diagram).

BENEFITS OF POLLUTION PREVENTION (P2)

•What is P2?

P2 is any action that avoids, eliminates, or greatly reduces the generation, amount and toxicity of waste at the source.

- P2 reduces the need for subsequent management or regulation of any kind.
- Implementing prudent P2 measures will help protect the health of Michigan's citizens and wildlife.
- P2 measures help alleviate costs and resources associated with controlling, removing and managing mercury contamination in the environment. For example:

A Michigan hospital, in one year, experienced three accidental mercury spills that each cost approximately \$3,000 to clean up.

In Minnesota, they estimated that it costs approximately \$2,500 - \$3,500 to remove one pound of mercury from a municipal waste incinerator's air emissions.

["Strategies for Reducing Mercury in Minnesota" Minnesota Pollution Control Agency (MPCA) - 1994.]

- Mercury P2 will help protect Michigan's fishing resource. Of all the inland states, Michigan has the highest annual recreational fishing expenditure (\$1.1 billion dollars) followed by Wisconsin and Minnesota.
- Mercury is not just a Michigan concern, but a national and a global concern as well. Michigan is proactive in its efforts to protect its natural resources and citizens from exposure to mercury.

This brochure was published by the Michigan Department of Environmental Quality and endorsed by the Michigan Mercury Pollution Prevention Task Force.



WHAT CAN I DO TO HELP?

- Buy alternative products that do not contain the following ingredients: thimerosal, phenylmercuric acetate, mercuric oxide, etc.).
- Choose alternatives to mercury-containing products including mercury-free batteries, thermometers with colored alcohol or digital thermometers, etc.
- Separate mercury-containing waste from your trash and save it for local household hazardous waste collection days.
- Take mercury-containing items such as thermometers to a household hazardous waste collection facility.
- Recycle button batteries.
- Conserve electricity. Burning less coal and oil (that naturally contains mercury) for electricity will emit less mercury into the environment.
- You can help! All of us have a role to play in reducing mercury emissions. You would be surprised what a difference your individual actions can make!

DISCARDS KNOWN TO CONTAIN MERCURY	P2 ALTERNATIVES
THERMOMETERS	RED BULB (ALCOHOL) THERMOMETERS DIGITAL THERMOMETERS
THERMOSTATS (NON-ELECTRIC MODELS)	ELECTRIC MODELS
BATTERIES (OLD ALKALINE TYPE PRIOR TO 1996)	RECHARGEABLE ALKALINE OR MERCURY-FREE BATTERIES
BUTTON BATTERIES	MERCURY-FREE BUTTON BATTERIES (ZINC AIR TYPE)
SILVER AMALGAM WASTE*	ASK YOUR DENTIST
QUICKSILVER MAZE TOY	MERCURY-FREE TOYS
OLD LATEX PAINTS (SINCE 1990, MERCURY HAS BEEN BANNED IN LATEX PAINTS)	NEW LATEX PAINT
SOME SHOES THAT LIGHT UP * (L.A. GEAR'S MY LIL' LIGHTS IF BOUGHT BEFORE JUNE '94)	MERCURY-FREE SHOES
SWITCHES (SOME LIGHT AND APPLIANCE SWITCHES)	MECHANICAL OR ELECTRICAL SWITCHES
CONTACT LENS SOLUTION CONTAINING THIMEROSOL *	MERCURY-FREE SOLUTION
LIGHTS (FLUORESCENT, HIGH INTENSITY DISCHARGE AND MERCURY VAPOR LAMPS)	ENERGY EFFICIENT FLUORESCENT LIGHTS (THESE LIGHTS STILL CONTAIN MERCURY, HOWEVER, ENERGY WILL BE CONSERVED THEREBY REDUCING MERCURY EMISSIONS FROM COAL & OIL COMBUSTION)
(* Note: The primary concern is the disposal and not the exposure to mercury. No studies have confirmed any health risk associated with the identified mercury applications.)	

DISPOSAL: Call your county or city for information on household hazardous waste collection centers.

FOR ADDITIONAL INFORMATION ON P2 ALTERNATIVES, CALL THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY: 1-800-662-9278.

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