

July 2003

Mercury

Mercury is a toxic, persistent metal that can build up in the body and cause adverse neurological and developmental health effects. Mercury can be found in soil, waterways and air emissions. It is also in many homes in the form of fever thermometers, barometers, fluorescent lamps and some switching devices in clothing irons and thermostats. The Ohio Mercury Reduction Group was created in May, 2001, to reduce mercury in Ohio. This interagency advisory organization includes representatives from Ohio EPA, Ohio Department of Health, the Ohio Department of Education, the Ohio Public Utilities Commission, and Bowling Green State University.

What is mercury?

Mercury is a naturally occurring metal typically found in the form of cinnabar ore which contains mercuric sulfide. The ore is heated to extremely high temperatures (above 1,000 degrees Fahrenheit) to vaporize the mercury. The vapors are then captured and cooled to form the familiar liquid metal.

At room temperature, mercury is a silvery, odorless liquid which vaporizes easily. These properties have given it the common names liquid silver and quicksilver. Mercury's most well known use is in fever thermometers, but it is also used in thermostats, electronics, propellant and fluorescent lamps. Mercury use in diuretics, antiseptics, preservatives, batteries and pesticides has greatly declined thanks to the discovery and use of effective substitutes.

Why is mercury a problem?

Mercury can be dangerous because of its high toxicity and potential for human exposure. Spilled mercury can remain in a home or school for a long time, giving off vapors that are dangerous when inhaled. Some forms of mercury are more toxic than others and some are absorbed more readily through different routes. When inhaled or absorbed through the skin, mercury accumulates in the liver, kidneys, brain and blood, causing both immediate and long-term health effects.

Mercury is an element and cannot be broken down into harmless components. Children should be cautioned not to play with mercury.

How could I be exposed to mercury?

- By eating contaminated fish and shellfish. Each year, fish advisories provide warnings about the kind and amount of fish that can be consumed to reduce potential exposure.
- Accidental mercury spills.
- Handling mercury.
- In some cases, unborn children are exposed through the mother's blood and infants may be exposed through breast milk.

How does mercury affect humans?

Mercury taken into the body through air, water and food is absorbed in varying amounts depending on the route of intake. Microorganisms convert inorganic mercury to methyl mercury. Ohio has fish advisories in

place because the methyl mercury accumulates in the tissue of fish that are eaten by humans.

The most universal effect of mercury is damage to the nervous system. Mental instability, dizziness, numbness in the limbs and personality changes such as nervousness, increased excitability or insomnia may occur after exposure to mercury vapors.

The toxic effects of mercury are serious. The federal and state governments have taken several steps to reduce the public's exposure to mercury, and is investigating ways to further reduce mercury risk. For additional information concerning health effects, contact the Ohio Department of Health, Bureau of Environmental Health at (614) 466-1390.

Can mercury affect some people more than others?

Children develop the symptoms of mercury poisoning more quickly and severely than adults. Neurological symptoms are very similar to those seen in adults. Children also may develop a bright red rash with sheets of peeling skin. In pregnant women, mercury easily crosses the placental barrier and concentrates in the fetus more readily than in the mother. Thus, a pregnant woman exposed to toxic levels of mercury may not exhibit any signs of mercury poisoning, but her child may be born with brain damage similar to cerebral palsy.

What should I do if there is a mercury spill or I am exposed to mercury?

Spilled mercury should NOT be vacuumed. Vacuuming causes mercury to vaporize and spread easily through the air, causing severe contamination. It also breaks the mercury into smaller beads that become trapped in carpet fibers. The spill should be isolated to avoid spreading contamination to other areas. To remove spilled mercury from carpet or textiles, certified contractors must use specially-designed vacuums and often must dispose of contaminated flooring material.

The correct way to dispose of small amounts of mercury is to pick it up with the sticky side of a piece of tape, place it in a sealed container and place it in the trash outside. Many beads of mercury are extremely small and are difficult to see with the naked eye. One way to identify the smaller beads is to turn out the lights and shine a flashlight across the impacted areas and look for reflection. Do not put mercury down the drain or dispose of it in the house, because it will continue to vaporize. Contact Ohio EPA's Spill Hotline at 1-800-282-9378 when a spill of mercury is larger than the amount in a small oral thermometer.

You could also be exposed to mercury if you move into a mercury-contaminated home, play with mercury, or participate in various hobbies such as firearm shooting, jewelry making and repair, or stained-glass-window making. If you suspect you

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have been exposed to a high amount of mercury, contact a physician immediately. Depending on how you were exposed to the mercury, other people who may have been exposed, such as family members or coworkers, might also be checked for contamination. To lessen potential spills and mercury-related problems, Ohio EPA and the Ohio Mercury Reduction Group (OMRG) recommend the use of mercury-free household products.

What should I do if a thermometer breaks inside a child's mouth?

The amount of mercury used in the common thermometer is very small. In general, little harm would be expected if a child swallowed the elemental mercury from a thermometer; however, under some conditions, such as inflammatory bowel disease, this could be dangerous. Other kinds of mercury that are more easily absorbed than elemental mercury might be toxic even if a small amount is swallowed. Contact your physician if you have been exposed to mercury.

For additional information about the proper disposal of thermometers and other mercury-containing devices, contact the Ohio Environmental Protection Agency, Division of Hazardous Waste Management at (614) 644-2917.

What are Ohio EPA and other organizations doing to reduce mercury use and exposure?

Elemental Mercury and Mercury Thermometer Collection Program

The Environmental Health and Safety Office at Bowling Green State University has a mercury collection program to help avoid accidental mercury spills and dispose of old mercury-containing devices. Program participants bring the collected mercury to the university's Hazardous Waste Storage Facility for proper disposal. Many local health departments, hospitals and communities also conduct mercury collection events or provide collection services.

Mercury Vapor Video

Ohio EPA has developed a short video that uses special lighting to show mercury vapors, which are normally invisible, odorless and tasteless. The 8-minute video also addresses the safest ways to clean up a mercury spill. To find out more about the video or to get a free copy for your classroom, business or community, contact Bill Narotski, Office of Pollution Prevention, at (614) 644-3469. To view mercury videos on the Web, go to: http://www.epa.state.oh.us/nwdo/nwer_home/htm or http://www.bgsu.edu/offices/envhs/environmental_health/mercury/index.htm

The Mercury Challenge!

Ohio EPA and the Ohio Hospital Association joined their national counterparts in signing an agreement that includes mercury reduction

goals for hospitals and medical facilities. Facilities design their own specified goals and agree to make good faith voluntary efforts to identify and implement prevention efforts. To learn more about what is going on in your area, visit: <http://www.epa.state.oh.us/opp/hospital.html>.

Auto Salvage Yards

Many older model cars contain mercury switches that can be removed, rather than crushed in the vehicle. To learn more, please see page 21 of the Small Business Assistance Office's (SBAO) Environmental Compliance Guide for Motor Vehicle Salvage Yards at: <http://www.epa.state.oh.us/sbao/publications/salvageguide.pdf>.

Ohio Mercury Outreach Project

In 2001 alone, Ohio EPA's Spills Hotline received 77 reports of mercury spills. Ohio EPA, U.S. EPA, the Ohio Department of Health, Bowling Green State University and the Ohio Spill Planning, Prevention and Emergency Response Association (OSPPERA) are currently working on the Ohio Mercury Outreach Project. The project is designed to provide information and action steps to reduce the presence of mercury in the community.

Additional Resources

Please see the following sources for more information about mercury, its benefits and dangers and how you can protect yourself from mercury exposure.

Mercury Awareness for School Teachers - <http://www.epa.state.oh.us/opp/schoolt1.pdf>

Mercury Information for Kids - U.S. EPA - http://www.epa.gov/superfund/kids/sup_fact/mercury1.htm

Ohio EPA's Office of Pollution Prevention Mercury Reduction Information - http://www.epa.state.oh.us/opp/mercury_pbt/mercury.html

U.S. EPA Mercury Information - <http://www.epa.gov/mercury/>

Great Lakes Regional Pollution Prevention Roundtable's Mercury Information - <http://www.glrppr.org/hubs/toc.cfm?hub=22&subsec=7&nav=7>

Fluorescent Lamp Fact Sheet - <http://www.epa.state.oh.us/dhwm/pdf/FluorescentFacts.pdf>

Ohio Department of Natural Resources Division of Recycling and Litter Prevention - <http://www.ohiodnr.com/recycling/awareness/facts/factsheets/mercury.htm>

Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Statement for Mercury - <http://www.atsdr.cdc.gov/toxprofiles/phs46.html>