

Mercury

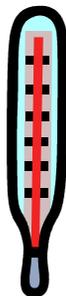
Answers to Frequently Asked Health Questions

What is mercury?

Mercury is a naturally occurring element found in the environment. Mercury is a metal found in three forms. The three forms of mercury are:

- Elemental (also called Metallic Mercury)
- Organic
- Inorganic

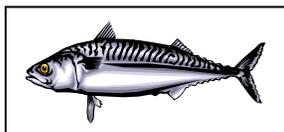
Mercury combines with other elements, such as chlorine, sulfur or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds.



Elemental or Metallic Mercury is a shiny, silver, odorless, liquid metal. Metallic mercury is the elemental or "pure" form of mercury because it is not combined with other elements. It is the common liquid metal used in thermometers, dental fillings, blood pressure cuffs, fluorescent light bulbs, barometers, batteries and switches. It can also be found in some older medicines. At room temperature (72°), metallic mercury will vaporize and form mercury vapors. These mercury vapors do not have a color, do not have a smell and are harmful to your health.

Organic Mercury is mercury that combines with carbon and hydrogen to make an organic Mercury compound. The most common organic mercury compound is methylmercury.

Methylmercury is produced by microscopic bacteria that live on the bottom



of lakes and ponds. These bacteria ingest the mercury and turn it into methylmercury. Higher levels of methylmercury in the water build up in the tissue of fish and can be dangerous.

Inorganic Mercury is mercury that combines with other elements such as chlorine, sulfur or oxygen, to form "salts." Mercury salts were once used in skin lightening creams and may be present in old antiseptic creams and ointments.

How does mercury enter the environment?

- Mercury can enter the water or soil from natural ore deposits in rock. Volcanic rock contains higher levels of mercury. Ohio's rocks contain low levels of mercury.
- Metallic mercury and inorganic mercury compounds can enter the air from burning coal and the coal mining waste.
- When mercury is released in the burning of coal, it will come down in the rain that will then run into Ohio's lakes and streams. Microscopic bacteria in the water ingest the mercury and convert it to methylmercury. The more mercury in the environment, the more methylmercury these small organisms in the water make. Higher levels of methylmercury in the water build up in the tissues of fish. The larger and older fish tend to have the highest levels of mercury. Note: Ohio fish advisories suggest limits for eating Ohio's fish.
- Metallic mercury easily evaporates into the air when the liquid metal is spilled.

How does mercury get in your body?

- By breathing the vapors in the air from a mercury spill. If you drop a mercury thermometer on the ground, it may break

and the mercury may separate into many small beads and spread throughout the room. At room temperature (72°), metallic mercury will vaporize. The higher the temperature, the more vapors will be released. These vapors are colorless, odorless and are harmful to your health.

- By breathing the smoke, vapors and particles from industries that burn mercury-containing coal.
- By eating fish or shellfish contaminated with methylmercury.
- By the small releases of mercury from dental work and medical treatments.
- By breathing contaminated workplace air or skin contact. There is an increased risk for dental, health services, chemical and other industries that use mercury.

How does mercury affect your health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms because more mercury in these forms reaches the brain.

Exposure to high levels of metallic, organic or inorganic mercury can permanently damage the brain, kidneys or a developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea (upset stomach), vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes and eye irritation.

How can families reduce the risk of exposure to mercury?

- Carefully handle and dispose of products that contain mercury such as thermometers or fluorescent light bulbs (see below health alert).
- Do not vacuum spilled mercury. It will break into small beads and vaporize.
- DO NOT wash any clothing that has come into contact with mercury.

- If a spill occurs, isolate the spill area (close off the room), and contact the local health department or Ohio EPA for guidance.
- Teach children not to play with shiny, silver liquids.
- Properly dispose of older medicines that contain mercury.
- Pregnant women and children should stay away from rooms where liquid mercury has been used or spilled.
- Learn about the Ohio fish advisories by calling (614) 644-2001 or visiting online at:
<http://www.epa.ohio.gov/dsw/fishadvisory/index.aspx>

Health Alert!!

Replace your mercury-containing thermometers and switches and replace them with mercury-free products. Contact your local Ohio EPA Division of Materials and Waste Management to ask how you can dispose of your old mercury thermometers and products that contain mercury.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of mercury in drinking water at 2 parts per billion (2 *ppb*).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 *ppm*).

The Occupational Safety and Health Administration (OSHA) has set limits of 100 $\mu\text{g}/\text{m}^3$ (microgram per cubic meter) of organic mercury per cubic meter of workplace air and 50 $\mu\text{g}/\text{m}^3$ of metallic mercury vapor for 8-hour shifts and 40-hour work weeks.

The Agency for Toxic Substances and Disease Registry (ATSDR) has set a guideline of $\leq 1 \mu\text{g}/\text{m}^3$ (microgram per cubic meter) as the acceptable level for most residential occupancy, provided no visible metallic mercury is present.

References:

The Agency for Toxic Substances and Disease Registry (ATSDR)
March, 1999. Toxicological profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

ATSDR Addendum Mercury Toxicity Profile, March 2008.

Where Can I Get More Information?

Ohio Department of Health
Bureau of Environmental Health and Radiation Protection
Radiological Health and Safety Section
246 N. High Street
Columbus, Ohio 43215
Phone: (614) 644-2727

Ohio Environmental Protection Agency
Division of Materials and Waste Management
50 West Town Street, Suite 700
Columbus, OH 43215
(614) 644-2621
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This fact sheet was developed in cooperation with the Agency for Toxic Substances and Disease Registry