

# Mercury

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**CAS Number: 7439-97-6**

## **What is mercury?**

Mercury is a metal that is found naturally in the environment. It can exist in several forms, as elemental mercury, and organic and inorganic mercury. Metallic mercury looks silver-white in color and is an odorless liquid. When it is heated, it becomes a colorless and odorless gas. Mercury can combine with other chemicals, for example, chlorine, carbon or oxygen, to form mercury compounds. The inorganic mercury compounds look like white powders or crystals. Mercuric chloride is an example of an inorganic mercury compound. Methylmercury is an example of an organic mercury compound.

Methylmercury is one of the most common forms of mercury that is known for its ability to build up in fish. As a result, very low levels of mercury can contaminate fish in oceans and lakes.

## **What is mercury used for?**

Mercury is found in a number of commonly used commercial and household products like thermometers, thermostats, barometers, batteries, fluorescent lights and lamps. Small traces of mercury are also used in dental amalgams used for teeth fillings. Mercury is also used as a power source for the generation of electricity.

In the past, methylmercury was used as a fungicide to destroy and prevent the growth of fungus on grains and animal feed. However, mercury-containing fungicides have since been banned from use in the United States.

## **How can mercury enter and leave your body?**

As a vapor, mercury can enter your body if you breathe it. Organic and inorganic forms of mercury can get into your body if you eat contaminated food like fish or drink contaminated water. All forms of mercury can be absorbed directly through the skin. Once inside your body, it could be several months before all of the mercury leaves. Mercury leaves the body through the urine and feces.

## **How can you be exposed to mercury?**

You can be exposed to mercury by eating contaminated fish or shellfish. Methylmercury is likely to build up in the tissues of certain fish. If you eat large amounts of fish, especially tuna and swordfish, then you may be at greater risk of exposure.

It is possible to breathe contaminated air if your work place handles mercury. You can be exposed to mercury if you work in the medical, dental, and other health services, and in chemical, metal processing, electrical equipment, automotive, building, and other industries.

Mercury exposure can also occur from National Priority List (NPL) sites, also known as Superfund sites. You can be exposed to mercury in the environment resulting from water and air near spills and toxic waste sites contaminated with mercury. Mercury is found at higher-than-normal background levels at 175 of 1,177 NPL sites.

You can be exposed to mercury that exists in background levels naturally. Air contains 2.4 parts of mercury per trillion parts of air (ppt). However, in areas where industries like mercury mines and mercury refineries are located, mercury levels can be close to 1,800 ppt.

### **What are the health effects of exposure to mercury?**

The health effects of mercury depend largely on the type or form of mercury you are exposed to and the exposure route. Some forms of mercury, for example, mercury salts found in food or water, are more harmful to the kidneys.

Exposure to all forms of mercury can affect the central nervous system. Methylmercury and metal vapors are more dangerous because they can reach the brain. If you experience memory problems, become irritable or shy, experience tremors or changes in vision or hearing, it may be a symptom of mercury exposure.

Long-term exposure to organic or inorganic mercury can cause permanent brain and kidney damage. It can also damage the fetus as it develops.

Short-term exposure to high levels of organic and inorganic mercury will have similar health effects as long-term exposure. However, you are more likely to have a full recovery after short-term exposure. Once you have been exposed to mercury, you can experience hallucinations and become delirious. Exposure to mercury by inhalation can cause chest pains, dyspnea (difficulty breathing), and coughing. If you have been exposed to mercury, by inhalation (breathing) or ingestion, you will have a metallic taste in your mouth. You will also experience nausea, vomiting and severe stomach pain.

Pregnant women exposed to high levels of methylmercury from eating contaminated fish can expose their developing fetuses to mercury. The fetus is particularly vulnerable to developmental

problems from exposure to mercury. Blindness, mental retardation, deafness, ataxia (loss of muscular control and coordination) and cerebral palsy has been seen in infants born to women who consumed high levels of methylmercury.

Mercury has not been shown to cause cancer in humans. Human studies have not linked exposure to elemental mercury to cancer. In addition, no studies exist on the ability of methylmercury to cause cancer.

The U.S. Environmental Protection Agency believes methylmercury is a possible cancer-causing agent but elemental mercury is not classifiable as a cancer-causing substance.

### **What levels of exposure have resulted in harmful health effects?**

Human studies show that individuals exposed to 0.13 parts per million (ppm) of metallic mercury in the air for three hours experienced shortness of breath, chest pains, coughing and became irritable. Long-term exposure to 0.0032 ppm of metallic mercury for 15 years caused shakiness in humans.

The human health effects from breathing organic mercury are not known.

The short- and long-term human health effects of eating and drinking inorganic mercury are not known. However, animal studies have been used as the basis for developing a minimal risk level (MRL) of 0.814 ppm for short-term (less than 14 days) exposure from water, and an MRL of 0.063 ppm for long-term (greater than 14 days) from food.

The human health effects of eating and drinking organic mercury in the short- and long-term are not known. However, an MRL of 0.00027 ppm for short-term exposure in water was developed based on animal studies.

### **Where can you get more information?**

Contact your state health or environmental department or:

Agency for Toxic Substances and Disease Registry  
Division of Toxicology  
1600 Clifton Road, N.E., E-29  
Atlanta, Georgia 30333

## References

1. Agency for Toxic Substances and Disease Registry (ATSDR). *Public Health Statement for Mercury*. Atlanta, GA: U.S. Department of Health and Human Services, 1990.
2. Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for Mercury*. Atlanta, GA: U.S. Department of Health and Human Services, 1999.
3. U.S. Environmental Protection Agency. *Health Effects Notebook for Hazardous Air Pollutants, Mercury and Compounds*. Office of Air Planning & Standards, 1994.
4. Reigart, Routh J. and Roberts, James R. Medical University of South Carolina. *Recognition and Management of Pesticide Poisonings*. Fifth ed. Washington, D.C.: U.S. Environmental Protection Agency, Office of Pesticide Programs, 1999.