

# MERCURY POISONING

## **What is mercury?**

Mercury is found naturally in the environment in several forms. In its elemental form, mercury is a shiny, silver-white, liquid metal used in thermometers and some electrical switches. It can be combined with other elements to form inorganic compounds. Mercury can evaporate to form colorless, odorless mercury vapors. Mercury can combine with organic material to form organic compounds such as methylmercury, which is produced primarily by bacteria and is the form which poses the greatest concern for environmental exposure.

## **What happens to mercury when it enters the environment?**

Mercury is persistent, mobile and bioaccumulative in the environment, meaning it is retained in organisms. Most of the mercury found in the environment is inorganic mercury that can enter the air from several sources. Examples of sources include emissions of coal-fired power plants, burning municipal and medical waste, and natural processes such as erosion of ores and volcanic activity. Methylmercury is quickly taken up into higher organisms through the food chain and is retained in their bodies. It reaches the highest levels in large predatory fish and in birds and mammals which consume fish. Levels of methylmercury in fish are typically 100,000 times those in the water in which they swim.

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

People are most likely to be exposed to metallic mercury from mercury released from dental fillings, however the amount of mercury released from dental fillings is generally not considered to be high enough to cause adverse health effects. Exposure may also result from breathing in air contaminated with vapors from metallic mercury spills. Mercury in the form of methylmercury is of greatest concern, and the common route of exposure is ingestion. Methylmercury is of particular concern because it can build up in certain fish to much higher levels and these fish may then be eaten by people. Federal Food and Drug Administration (FDA) regulations prohibit the sale of commercial fish that are found to have high levels of methylmercury. Also, state and federal authorities issue public health advisories to warn people about eating fish caught from local waters that are contaminated with mercury.

## **How can mercury affect my health?**

Exposure to high levels of elemental mercury vapor can result in nervous system damage including tremors, and mood and personality alterations. Exposure to relatively high levels of inorganic mercury salts can cause kidney damage. Adult exposure to relatively high levels of methylmercury through fish consumption can result in numbness or tingling in the extremities, sensory losses and loss of coordination. Exposure of the developing fetus through maternal intake of contaminated fish can result in neurologic developmental abnormalities in cognitive and motor functions. Whether any of these symptoms actually occur, and the nature and severity of the symptoms, depend on the amount of exposure.

## **Who is at risk from mercury exposure?**

Except in occupational settings where elemental mercury is used, most of the health risk from mercury exposure is due to methylmercury exposure from fish consumption. Many factors determine risk from exposure including the dose, the duration, and the type of contact. The developing fetus and young children are a higher risk population because methylmercury in the mother's body may enter the unborn child and breast-feeding infants. Young children are at risk because their nervous systems are still developing and because of their lower body weight compared to adults. Exposure and health risks may be determined by measuring the amounts of mercury in blood, urine, breast milk and hair. Over time, your body can rid itself of some contamination. Adults who consume an unusually large amount of contaminated fish on a regular basis may also be at risk.

## **What has been done to safeguard human health?**

EPA has set a limit of 2 parts per billion for mercury in drinking water nationwide. EPA also recommends that the level of mercury in rivers, lakes and streams should be no more than 0.144 parts per billion for the protection of human health. The FDA has set a maximum permissible level of one part of methylmercury in a million parts of seafood. EPA's Office of Water has issued guidelines for fish consumption advisories for methylmercury.

## **Recent EPA reports on mercury**

### **EPA's Report to Congress - December 1997.**

Provides an assessment of the magnitude of mercury emissions in the country by source, the health and environmental implications of those

emissions, and the availability and cost of control technologies. The report is viewed as a "snapshot" of current understanding of mercury. It does not quantify the risk from mercury exposure because of scientific uncertainty in a number of areas.

### **EPA's Utility Air Toxins Report to Congress - February 1998.**

Concludes that mercury from coal-fired power plants is of serious concern. Power plants account for about one-third (52 tons) of annual manmade mercury emissions in the country. The report states that EPA has been unable to identify any currently feasible, commercially available technology for reducing these emissions. It recommends further evaluation of potential control strategies.

### **Fish Consumption Advisories**

#### **New Jersey**

Fish consumption advisories covering waters of New Jersey are available from the New Jersey Department of Health and Senior Services at: <http://www.state.nj.us/health/eoh/foodweb/fishguid.htm>

#### **New York State**

Fish and game consumption advisories covering all waters of New York State are available from the New York State Department of Health at: <http://www.health.state.ny.us/nysdoh/fish/fish98.pdf>

#### **Puerto Rico and U.S. Virgin Islands**

Fish consumption advisories are not available on the Internet. Please consult local health departments.

### **Ritual Use of Mercury Program.**

The Ritual Use of Mercury Program is a public education campaign directed to Haitian- and Caribbean-American communities, particularly those that practice spiritist faiths such as Santeria. It has developed as a collaborative effort between EPA, state departments of health, and Hispanic services organizations. More information is available at: <http://www.epa.gov/opptintr/cbep/actlocal/mercury.htm>

### **Other Sources of Information**

#### **EPA Region 5 Mercury Webpage:**

<http://www.epa.gov/grtlakes/seahome/mercury/src/outmerc.htm>

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