



## **DEPARTMENT OF HEALTH & HUMAN SERVICES**

**Health Resources and Services Administration  
Bureau of Primary Health Care  
Division of Federal Occupational Health**

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### *Mercury*

#### **What Is Mercury?**

Mercury is a naturally-occurring element in the environment. It is a heavy, silver-white metal that is liquid at room temperature. It is neither flammable nor explosive. Mercury is a very good conductor of electricity, and it combines easily with many other metals. Most mercury is derived from the naturally-occurring mineral cinnabar (mercury sulfide).

#### **Why Does the United States Stockpile Mercury?**

Mercury was once needed for many purposes, including defense applications. The Defense National Stockpile acquired mercury after the United States exhausted its own mercury ore reserves. The goal was to avoid dependence on foreign sources in times of national emergency.

Today, our defense needs and access to global markets have changed. As a result, mercury, which is one of the 56 different commodities in the stockpile, has been declared excess, and the Defense National Stockpile Center (DNSC) must decide how to manage it over the long term. DNSC is responsible for managing all materials in the national stockpile. When a commodity is designated in excess of defense needs, it is usually sold in an open competition that generates revenue for the United States Treasury. However, DNSC stopped selling mercury in 1994 because of concerns about mercury accumulation in the global environment.

DNSC is preparing an Environmental Impact Statement (EIS) that analyzes a range of reasonable alternatives for the long-term management of mercury and the potential impacts of the alternatives on the natural and human environments.

#### **How Is Mercury Used Today?**

Mercury is used in consumer products such as fluorescent lights, electrical switches, hood and trunk lights in vehicles, thermostats, measuring devices, and as a component in dental fillings. Medical uses include blood pressure monitors, thermometers, and medications. It is also used in certain manufacturing processes; for example, the chlor-alkali industry uses it to produce chlorine. However, many products once made with mercury (such as batteries, paints, and pesticides) are increasingly made with alternative substances.

#### **How Does Mercury Enter Our Environment?**

Mercury is released into the air, water, and soil by a variety of natural processes and human activities. Mercury vapor is released from rocks, soils, and surface waters. It evaporates easily into the atmosphere where it can be transported long distances. It returns to land or water surfaces through rain or snow and the cycle is repeated. In addition, mercury is discharged to the environment through human activities such as manufacturing and burning coal to produce electricity. Many bottom-dwelling fish are exposed to mercury in sediments and in water from industrial processes. Because other fish, birds, and humans consume the bottom-fish, the mercury is transferred up the food chain.

**Health Effects from Different Forms of Mercury**

There are three forms of mercury: elemental mercury, inorganic mercury compounds (primarily mercuric chloride), and organic mercury compounds (primarily methyl mercury). All forms of mercury are toxic and each form produces different health effects in humans. The mercury in the DNSC inventory is elemental mercury, the least toxic of its three forms.

**Elemental Mercury:** The major health effect from elemental mercury results from inhalation of mercury vapor. Acute (short-term) inhalation exposure to high levels of elemental mercury in humans results in central nervous system effects such as hallucinations and delirium. Gastrointestinal and respiratory effects have also been noted. Studies are inconclusive regarding elemental mercury and cancer.

The central nervous system is the major organ affected by chronic (long-term) exposure to elemental mercury. Effects noted include increased excitability, irritability, insomnia, severe salivation, loss of teeth, and tremors. Chronic exposure to elemental mercury also affects the kidneys.

**Inorganic Mercury Compounds:** The major risk from inorganic mercury occurs through ingestion. Acute oral exposure to inorganic mercury compounds has been known to produce a metallic taste in the mouth, nausea, vomiting, and severe abdominal pain. The primary effect from chronic exposure to inorganic mercury is kidney damage.

**Organic Mercury Compounds:** The major risk posed by organic mercury occurs through ingestion. The most important organic mercury compound in terms of human exposure is methyl mercury. Acute exposure to high levels of methyl mercury results in central nervous system effects, including blindness, deafness, intellectual deterioration, and death. No human studies are available on the carcinogenic effects of methyl mercury.

Chronic methyl mercury exposure occurs primarily through diet, with fish and fish products as the dominant sources. The primary effect from chronic exposure to methyl mercury is damage to the central nervous system, which produces malaise, numbness and tingling, blurred vision, deafness, speech difficulties, and constriction of the visual field. Infants born to women who ingest high levels of methyl mercury may exhibit blindness, mental retardation, lack of coordination, and cerebral palsy.

**For more information, please refer to the following web sites:**

[www.atsdr.cdc.gov/tfacts46.html](http://www.atsdr.cdc.gov/tfacts46.html)

[www.orcbs.msu.edu/aware/pamphlets/hazwaste/mercuryfacts.html](http://www.orcbs.msu.edu/aware/pamphlets/hazwaste/mercuryfacts.html)