



OE(3)-2012-03

April 2012

Safe Management of Mercury (Hg)

PURPOSE

This Operating Experience Level 3 (OE(3)) was issued to raise awareness about mercury hazards and to reinforce the information in Safety and Health Bulletin 2005-08, *Safe Management of Mercury*.

BACKGROUND

Recently, the Office of Health, Safety and Security (HSS) has received a number of inquiries concerning mercury safety issues, including a request to clarify the applicability to Department of Energy (DOE) sites of the ACGIH Biological Exposure Index (BEI) for mercury. (The resultant clarification explains that monitoring BEIs is not required by title 10, Code of Federal Regulations, part 851, or DOE Order 440.1B.) That inquiry alerted HSS that DOE's commitment to worker protection will be well served by following the 2005 Safety and Health Bulletin with this second reminder to identify and control mercury hazards.

Mercury is found in small amounts in thermostats, thermometers, manometers, barometers, gauges, switches, lighting, and other items. Some DOE facilities have larger quantities. For example, it is used inside the accelerator targets at the Spallation Neutron Source facility. In addition, mercury dropping electrode systems are used in electrochemical experiments and the discontinued process of enriching lithium resulted in tons of mercury wastes and contaminated soil/debris. Hundreds of tons of elemental mercury are stockpiled at a storage facility in Oak Ridge, Tennessee.

The most common incidents involving mercury have been leaks, discharges, and spills in quantities ranging from milliliters to over 100 pounds. Many sites have come across mercury contamination when cleaning or demolishing facilities.

REASON FOR CONCERN

Elemental mercury is a heavy, silver-white metal that is liquid at room temperature. Due to its vapor pressure, liquid mercury can volatilize at room temperature. Inhalation of inorganic mercury vapors is the main cause of illness because mercury is readily absorbed by the lungs.

Short-term exposure to high levels of mercury vapors may cause lung damage, nausea, vomiting, diarrhea, increased blood pressure, skin rashes, and eye irritation. Symptoms of chronic poisoning include inflammation of the mouth and gums, increased saliva production, weakness, loss of appetite and weight, and impaired digestive and kidney functions. Effects of mercury on the central nervous system often show up as tremors, particularly in the hands. Irritability, temper outbursts, excitability, shyness, and indecision are other central nervous system symptoms of mercury poisoning.

Elemental mercury can combine with other elements to form toxic inorganic and organic mercury compounds that can seriously affect the nervous system, lungs, kidneys, and developing fetus.



CONTROLLING THE HAZARDS

Ensure that all users and bystanders are properly trained in the hazards of mercury and observe the good practices given in the Federal Web sites shown below.

This OE(3) document requires no followup report or written response.

ADDITIONAL SOURCES OF INFORMATION

- Your safety and health office
- Waste management specialists
- Information on the Web:

<http://www.cdc.gov/niosh/docs/81-123/pdfs/0384.pdf>

<http://www.cdc.gov/niosh/docs/81-123/pdfs/0383.pdf>

<http://www.atsdr.cdc.gov/mmg/mmg.asp?id=106&tid=24>

<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>

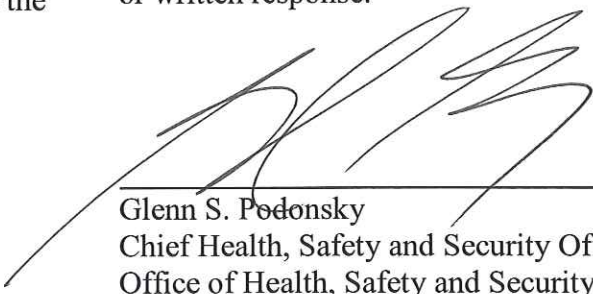
<http://www.cdc.gov/niosh/73-11024.html>

<http://www.epa.gov/iris/subst/0370.htm>

SUMMARY

- Mercury is found at all DOE sites.
- Exposure to mercury and mercury compounds can lead to serious health problems.
- Take proper precautions when handling mercury and cleaning up spills.

If you have any questions, please contact Dr. Bill McArthur by telephone at (301) 903-9674 or at bill.mcarthur@hq.doe.gov.



Glenn S. Podonsky
Chief Health, Safety and Security Officer
Office of Health, Safety and Security

