University of Colorado Colorado Springs

UCCS SAFE OPERATING PROCEDURE

37. SAFE STORAGE AND HANDLING OF MERCURY-CONTAINING ITEMS

(For assistance, please contact Environmental Health & Safety)

Hazard Information

Mercury is a naturally occurring metal that has several forms. Metallic mercury is the familiar heavy, shining, silver-white liquid at room temperature. If heated, it becomes a colorless, odorless gas. Mercury also vaporizes at room temperature, though at a slower rate. MERCURY IS KNOWN TO BE TOXIC to humans, especially young children and unborn babies. ***However, mercury is not a health threat when safely encased.***

Many commercial products and items contain metallic mercury and/or mercury compounds. Mercury-containing products are regulated as hazardous waste for disposal. **All mercury-containing products and items must be turned in to Environmental Safety for proper disposal**.

Examples of items that can contain mercury include:

- Thermostats. Many temperature control devices contain an ampoule of mercury metal. When replacing defective thermostats select a digital type replacement, which does not use mercury. ***Do not attempt to disassemble a mercury-containing thermostat or otherwise disturb the housing*** Package the entire unit in a plastic bag for pick-up by EH&S.
- Fluorescent and High Intensity Bulbs. Some fluorescent, neon, mercury vapor, high-pressure sodium, metal halide, and high intensity lamps contain regulated quantities of mercury. These items must be properly disposed via the Universal Waste (Recycling) Coordinator in Facilities Management or Environmental Safety.
- Batteries. Certain types of batteries contain significant amounts of mercury and must be turned in to Environmental Safety for proper disposal.
- Thermometers, Manometers, Sphygmomanometers, etc. Replace mercury based equipment with digital or organic liquid based equipment whenever possible. ***Never use mercury thermometers in ovens or other heat producing equipment.***
- Electrical Switches and Dials. Some electrical switches and dials contain mercury. Care should be taken to prevent breakage or leakage of mercury when removing these types of items from service; leave them intact and bag in plastic for pick-up by EH&S.
- Paints. Prior to 1991, mercury was incorporated into some paint formulations as a biocide agent. Mercury-containing paints and related items (i.e., brushes, rags, etc.) must be bagged in plastic and turned in to EH&S for proper disposal.
- Agricultural Products. A very limited number of agricultural fungicides contain Mercury. Mercury-containing fungicides must be returned to the distributor or bagged in plastic and turned in to EH&S for proper disposal.

Routes of Exposure

Mercury may enter the body through inhalation, ingestion or skin absorption and cause serious damage to many systems of the body. Once in the bloodstream metallic mercury travels to other parts of the body, including the brain and kidneys, and can remain in these organs for months.

Health Effects

MERCURY HEALTH EFFECTS ARE CUMULATIVE!

- Mercury causes damage to the nervous system and brain -- unborn and young children are most vulnerable because their nervous systems are still developing.
- Mercury also causes damage to the kidneys, liver, stomach, respiratory system, intestines, and increases blood pressure and heart rate.
- Skin contact can cause an allergic reaction resulting in skin rashes.
- Contact with the eyes can cause severe irritation.
- Swallowing mercury can cause nausea, vomiting and diarrhea.
- Mercury vapor causes damage to the lining of the mouth and lungs. High levels of mercury vapor exposure can cause death.
- Mercury exposure can result in
  - General fatigue,
  - Tremors,
  - Insomnia,
  - Weakness,
  - Memory loss,
  - Headaches,
  - Irritability,
  - Nervousness,
  - Changes in hearing and vision,
  - Emotional disturbance, and
  - Unsteadiness.

METALLIC MERCURY SPILLS

Most mercury spills at UCCS are small, and can be readily cleaned up by personnel working in the area where the spill occurs. All work areas that use mercury must have mercury spill kits available, and train workers in their proper use.

Commercial Mercury Spill Response Kits and Devices

- Amalgamating kits: sold by safety and lab supply vendors, amalgamating powder is sprinkled over the droplets of mercury, wetted to initiate the amalgamating reaction; the mixture is scooped up and placed in a container for disposal. Some kits are equipped with a small hand pump for collecting large mercury droplets before amalgating and for difficult to reach areas.
- Sponges: specially designed sponges that pick up mercury droplets when firmly pressed against the surface of the spill, work best on non-porous, smooth surfaces. **Use of a sponge alone is not recommended** -- the area should also be treated with an amalgamating powder to reduce any mercury vapors from residual mercury.
- Mercury vacuum: essential only for responding to large mercury spills and not an economical choice for minor spills resulting from broken thermometers or other small mercury-containing items. These devices are specially designed to purify exhaust air and capture the elemental mercury for recycling. A HEPA vacuum is not suitable for mercury spill cleanup.
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Small Mercury Spills (5 ml's or less from small devices such as thermometers)

- If the spill is onto or within a heated surface, do not attempt to clean it up.
  - Turn off the heat-producing device,
  - Turn on fume hoods or open windows to ventilate the area,
  - Isolate the room from others by shutting connecting doors,
  - Evacuate the room, and shut the door,
  - Placard the door(s) to the room "Mercury Spill - Do Not Enter.",
  - Contact Environmental Safety for assistance.
- If the spill is not onto a heated surface, access the spill kit and follow the enclosed instructions. In general, this should include:
  - Turn on fume hoods or open windows to ventilate the area,
  - Isolate the room by shutting all doors,
  - Wear protective latex or nitrile gloves,
  - Consolidate the mercury droplets using the scrapers provided, two small pieces of stiff cardboard, index cards or plastic "credit cards",
  - Collect droplets using hand pump, mercury sponge, or amalgamating powder,
  - Place the recovered mercury and other contaminated materials in a heavy-walled, polyethylene screw-cap bottle; labeled "MERCURY SPILL RESIDUE."
  - Remove gloves and place them in the mercury spill residue bottle.
  - Wash hands, arms and face thoroughly.
  - Tag the spill residue bottle for collection as a hazardous waste.

Large Mercury Spills

IF MORE THAN 5 ML OF MERCURY IS INVOLVED IN THE SPILL CONTACT EH&S @ 255-3111

Last reviewed by Cynthia Norton on December 15, 2015.