

Iowa Department of Public Health
Hazardous Substances Emergency
Events Surveillance System

LIQUID MERCURY FACTS

This fact sheet contains general information regarding liquid mercury and its risks as well as information about how people can protect themselves from exposure and adverse health effects. The fact sheet has been developed as part of a combined study between the federal Agency for Toxic Substances and Disease Registry and the Iowa Department of Public Health. The Hazardous Substances Emergency Events Surveillance (HSEES) System collects data on emergency hazardous substance releases. The system's purpose is to reduce the incidence of injury and death associated with the release of hazardous substances. A clear understanding of how and why liquid mercury releases occur and how to avoid them can assist in better training. It can also improve the safety of employees, emergency responders, and the general public.

In Iowa, from January 1991 through June 2001 there were 23 mercury releases reported to the HSEES System. Seven events occurred in schools, seven were in resident's homes, six occurred in a factory or industry setting, two took place at medical facilities, and one event was the result of illegal dumping at a county park. An evacuation took place during seven of the events and one individual sought medical care after becoming ill after mercury exposure.

What is Mercury?

Although this fact sheet will focus on liquid mercury, there are hazards associated with other types of mercury. There are three types of mercury:

Inorganic (e.g., Mercuric or mercurous mercury) – This type of mercury is a naturally occurring element released when volcanoes erupt and rocks erode. The problem with the element arises when sources of this type of mercury, such as coal-burning power plants and mining ore deposits, release additional mercury into the air. Bacteria and other processes in lakes and rivers can convert inorganic mercury into methylmercury.

Organic (e.g., Methylmercury) – When inorganic mercury is deposited into the water microorganisms help convert it to methylmercury, which is a more toxic form that accumulates in fish.

Elemental (i.e., Liquid mercury) – Liquid mercury is used in thermometers, fluorescent light bulbs, and medical equipment such as instruments that measure blood pressure. Some people use liquid mercury in ethnic folk medicine and for religious practices. More recently, glass pendant necklaces containing liquid mercury have become popular among high school children.

How Can Liquid Mercury Affect My Health?

The central nervous system is very sensitive to mercury vapors. Although liquid mercury is not directly toxic, the vapors from it are. Short-term or long-term exposures can lead to serious health problems. Exposure to high levels of liquid mercury vapors can permanently damage the brain, kidneys, and the developing fetus. Effects on the brain may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems. Short-term exposure to liquid mercury may result in nausea, vomiting, diarrhea, increase in blood pressure or heart rate, skin and eye irritation and lung damage.

How Can I Reduce the Risk of Exposure to Liquid Mercury?

Avoid using products that contain liquid mercury. Properly dispose of all products that contain liquid mercury, such as thermometers or fluorescent light bulbs. Urge your local school system to stop conducting experiments in science classes that involve liquid mercury, to use less hazardous substances to demonstrate scientific principles, and to dispose of unnecessary hazardous chemicals in storage. If you must use a product containing liquid mercury, store it safely in a leak and shatter proof container and in a locked, secure place. When liquid mercury spills, it breaks into tiny beads. Those beads can roll into cracks in floors or walls, or may become trapped in carpet or upholstered furniture. Liquid mercury vaporizes and can rapidly spread throughout a room. If spilled near heating ducts, the vapor can spread throughout a home or building quicker. Without proper cleanup, people may be exposed to hazardous levels of liquid mercury vapors.

What Should I Do If a Small Spill Occurs

If you must use a product containing liquid mercury, a mercury spill kit should be kept on hand.

If there is a minor release of mercury, such as from an oral or rectal thermometer, and a mercury spill kit is not available use the following steps:

- Wear rubber gloves (to be thrown away)
- Keep children and pets out of area during clean-up
- Use stiff paper or cardboard to gently sweep beads of mercury onto a dust pan or another piece of stiff paper or cardboard.
- Use a flashlight to help find any remaining particles.
- Duct tape, packing tape, or masking tape may be used to pick up small particles.
- Place mercury in wide mouth glass or plastic container and tape lid in place.
- Dispose of all items that may have touched the mercury in a plastic zip lock bag or sealed garbage bag.
- Contact the Regional Collection Center for Hazardous Household Materials in your area to set up a disposal appointment.

For spills greater than the amount contained in a thermometer:

- Evacuate and secure the spill area.
- Before people leave, be sure shoes, clothing and other articles have not been exposed to mercury.
- Close all doors, windows, ducts and passageways that lead to other rooms.
- Ventilate the affected room by opening all windows and doors that open to the

outside.

Call your local health department or the Statewide Poison Control Center (1-800-352-2222) for instructions on safe clean up.

DO NOT try to clean up liquid mercury without getting advice from a poison control center or your local health department. **DO NOT** sweep a liquid mercury spill with a broom. **DO NOT** vacuum a liquid mercury spill. Vacuuming will rapidly spread liquid mercury vapors into the air, increasing exposure and contaminating the vacuum. **DO NOT** pour mercury down a drain. It may lodge in the plumbing and cause future problems. **DO NOT** use household cleaning products to clean up a spill. These products may contain bleach or ammonia that can react violently with liquid mercury.

The following items are examples of reported incidents involving liquid mercury.

- ◆ In June 1996, liquid mercury was taken from a middle school and played with by a group of teenagers both inside and outside of the school building. Approximately 200 children were tested for mercury exposure, one child was hospitalized and another five underwent outpatient treatment. Twenty other children had mildly elevated mercury levels but not to levels that are known to affect health.
- ◆ In May 2000, a student spilled liquid mercury at a high school forcing the closure of the school while workers decontaminated the building.
- ◆ Approximately 50 students were evacuated from an Iowa college dormitory after someone dumped approximately a half cup of liquid mercury outside a shower stall. This allowed vapors to form and the mercury was subsequently spread throughout the dormitory.
- ◆ A student rolled a ball of liquid mercury down the aisle of a school bus, potentially exposing dozens of students. The student also shared the liquid mercury with three other students. The liquid mercury had been stolen from a science room. The ramifications of this act were thought to have lead to possible contamination of other schools, buses, vehicles and homes.

More information about mercury in schools may be accessed through the Mercury in Schools website at www.mercury-k12.org.

For more information about hazardous waste disposal in Central Iowa, call Metro Waste Authority's Regional Collection Center at (515) 967-5512 or visit www.mwatoday.com.