



Idaho Chemical Roundup

Best Practices for Mercury

Mercury

Mercury is a naturally occurring metallic element that is found in trace amounts in air, water, and soil. It comes in three forms—elemental, inorganic, and organic. Mercury is familiar to most of us in its *elemental* form as the heavy, silvery liquid metal used in thermometers and fluorescent light bulbs. *Inorganic* mercury compounds are created when mercury is combined with other elements, such as chlorine, sulfur, or oxygen. In labs, common forms include mercuric chloride, mercuric sulfide, and mercuric nitrate. *Organic* mercury compounds are formed when microscopic organisms convert inorganic mercury into methylmercury, which accumulates up the food chain and can build up to unhealthy levels causing fish consumption advisories and other restrictions.

All forms of mercury are poisonous, especially to children. The severity of effects depends largely on the amount and timing of exposure. Short-term exposure to high concentrations of mercury vapor can cause harmful effects on the kidneys and the nervous, digestive, and respiratory systems. Chronic exposure can permanently damage the brain and kidneys.

Best Practices

Schools should work to eliminate mercury from the classroom wherever possible.

- ✓ Identify mercury-containing equipment and chemicals in your lab. Thermometers, barometers, fluorescent lighting, thermostats, switches, novelty items such as mazes, and chemicals may contain mercury.
- ✓ Replace mercury compounds and thermometers with mercury-free alternatives.
- ✓ Remove and recycle bulk mercury and mercury containing items.

Disposal Considerations

Mercury is recyclable. Best practices suggest mercury and mercury-containing equipment be recycled through a hazardous waste management company. Some equipment vendors may offer product take-back programs to recycle older mercury equipment. For example, mercury thermostats can be recycled through a national recycling program. Consult DEQ's Guide to Recycling and Waste Management in Idaho for mercury recycling services at www.deq.idaho.gov/media/1074/deq-recycling-guide.pdf.

Many landfills refuse to take mercury waste, in which case a hazardous waste management company will be your only option. If your school is a conditionally exempt small quantity generator, it may be permissible to dispose of mercury at your local landfill, but only with permission of the landfill operator.

Do not pour mercury down the drain. It is highly toxic to organisms in your septic tank or at the wastewater treatment plant. Mercury is heavy and can become stuck in sink traps and spill when cleaning the traps, creating a health risk.

Mercury Spills

Mercury and mercury-containing components are hazardous wastes due to their toxicity. Keep students and staff away from contaminated areas. Even small amounts of mercury can pose a risk to human health and the environment. Exposure to mercury by inhalation is of particular concern in managing a spill. Spills of more than one pound (two tablespoons) must be reported to the U.S. Environmental Protection Agency (EPA) through the National Response Center (NRC). The NRC hotline operates 24 hours a day, 7 days a week. Call (800) 424-8802.

For small spills, less than the amount contained in a thermometer:

According to EPA, the general public can clean up small mercury spills no greater than the amount contained in a thermometer if spilled on a flat surface. If your spill is larger, is not on a flat surface, or uncertainty exists to the cleanup method, spill size, or exposure, isolate the contaminated area and call the Idaho State Communications Center at (800) 632-8000 or (208) 846-7610.

Spill clean up with a mercury spill kit:

Mercury spill kits contain powders, granules, sprays, and/or cleanup materials specific for cleaning mercury spills. Spill kits range in price from \$50 to \$300 depending on contents. Follow the directions outlined in the kit.

If you do not have a mercury spill kit:

If a commercial mercury spill kit is not available, the spill may be managed with other items. Have on hand nitrile or neoprene gloves, a squeegee or playing card, eye dropper, plastic zipper-type bags, paper towels, and sulfur powder. Powdered sulfur may be purchased at garden supply stores or pharmacies.

1. Put on gloves.
2. Secure the area to keep the mercury spill from spreading and to keep people from coming in contact with it.
3. If there are any broken pieces of glass or sharp objects, pick them up with care. Place all broken objects on a paper towel. Fold the paper towel and place in a zipper-type bag. Secure the bag and label the bag accordingly (i.e., broken glass).
4. Use a squeegee or cardboard to gather the mercury beads. Use slow sweeping motions to keep the mercury from becoming uncontrollable. Use a flashlight to look for any additional mercury beads that may be sticking to the surface or in small cracked areas of the surface.
5. Use an eyedropper, piece of paper, or cardboard to collect or draw up the mercury beads. Slowly and carefully transfer the mercury onto a damp paper towel. Place the paper towel in a zipper-type bag and secure. Label the bag.
6. Place all materials used with the cleanup, including your gloves, and all mercury beads and objects into a zipper-type bag. Secure and label the bag as mercury-contaminated hazardous waste.
7. Shine a flashlight on the spilled area. If you still see any small droplets, they can be picked up by touching them with a piece of duct tape. (Remember to wear gloves and dispose of all materials in zipper-type, labeled bag.)
8. Once all visible mercury is picked up and placed in the bag, sprinkle sulfur powder on the spill area; a color change from yellow to brown indicates that mercury is still present. Use a small brush to sweep up the sulfur and residual mercury, and place it into the same bag.
9. Contact your hazardous waste management company for disposal in accordance with local, state, and federal laws.
10. Keep a window open for at least 24 to 48 hours **after** your successful cleanup. Continue to keep students and staff out of cleanup area. If sickness occurs, seek medical attention immediately.
11. Mercury can be cleaned up easily from hard, smooth surfaces like wood, linoleum, and tile. If a spill occurs on carpet, curtains, upholstery, or a similar surface, cut out the contaminated portions and dispose of as hazardous waste as outlined above. Once removed, check the floor below to ensure mercury has not soaked through the carpet.

Mercury can spread easily and volatilize at room temperature, increasing exposure.

- ✓ Never use a vacuum cleaner to clean up mercury. The vacuum will put mercury vapor into the air and increase exposure. The vacuum will become contaminated and need to be disposed of as hazardous waste.
- ✓ Never use a broom to clean up mercury. It will break the mercury into smaller droplets and become contaminated.
- ✓ Never pour mercury down the drain. It may lodge in the plumbing and continue to volatilize over time, or expose workers during maintenance and repair of plumbing system. Due to its toxicity, it may also cause problems with the operation of the septic or sewer system.
- ✓ Never wash mercury-contaminated items in a washing machine. Mercury may contaminate the machine.
- ✓ Avoid foot traffic in spill areas. This will spread the mercury around making it harder to clean.
- ✓ Do not wear jewelry when cleaning up a spill. Mercury will adhere to and contaminate gold and other metals.

For More Information

For information about mercury and Idaho's hazardous waste requirements, contact the Department of Environmental Quality at (208) 373-0502 or visit www.deq.idaho.gov.