



Mercury Spill Clean Up

Purpose

The objective of these guidelines is to ensure the safe and proper handling of a mercury spill. These guidelines apply to any elemental mercury spill on Bucknell University property locations. They do not apply to broken mercury vapor or fluorescent light bulbs (see Disposal procedure for Broken Fluorescent Bulbs.) Elemental mercury is a commonly used toxic material and must be handled properly to prevent its absorption into the body. The properties of mercury make it a difficult material to control once spilled.

General Requirements

- Always store mercury in unbreakable containers with tightly closed lids located in a well-ventilated area.
- Do not store with Acetylene, Fulminic Acid, or Ammonia. Mixing mercury with these chemicals can result in explosive materials.
- When breakage of an instrument containing mercury is a possibility, the instrument should be placed in an enameled or plastic pan that can be cleaned easily. Be sure the pan is large enough to contain the mercury.
- Transfers of mercury from one container to another should be carried out in a hood, over a tray or pan to confine any spills.
- Do not handle mercury over sinks where it could spill down the drain. Always wear nitrile gloves while handling mercury.
- When a spill occurs, isolate the area to prevent people from entering the spill area and spreading the contamination. This is done with warning signs and barrier tape, locked doors, or other similar actions. Make the perimeter of the isolated area three feet beyond the most distant visible beads of mercury.
- Women who might be pregnant, or people with a history of kidney damage, should be kept away from the spill area until the clean-up is finished.
- Determine if the spill is a simple spill. A simple spill is one involving less than 30 milliliters of mercury (about one pound), where all of the mercury is accessible on a non-porous surface. This type of spill can be cleaned-up with less than two hours of actual cleaning.
- A spill is considered complex if it involves more than 30 milliliters of mercury (>1 pound), is located on a porous surface, is not easily cleaned-up, or is widely spread. Assessing and cleaning complex spills requires specialized equipment, knowledge and



training. Therefore, only qualified personnel shall clean-up spills of this nature. Users shall contact Environmental Health & Safety if a complex spill is suspected.

Simple Mercury Spills

- If the spill is determined to be a simple spill, it should be cleaned-up by the laboratory staff immediately using a mercury spill kit.
- Prior to cleanup, remove all gold or silver rings, watches and bracelets.
- Protective gloves such as nitrile or other impermeable material shall be worn during the mercury clean-up.
- Wear disposable shoe coverings so you do not contaminate your shoes with mercury during the cleanup.
- Begin your cleanup at the outer perimeter of the spill. Work carefully, it is easy to miss contamination, or spread the contamination when the clean-up work is rushed.
- Mercury should never be swept with a broom or vacuumed with an ordinary vacuum cleaner, which will disperse mercury droplets, increase the airborne level of mercury vapor and contaminate the equipment used.
- The preferred way to collect mercury is to dust the area of the spill with mercury absorbing powder. Use a damp sponge; work the powder into a paste while scrubbing the contaminated surface. After the paste has dried, it can be collected with a squeegee or stiff card and placed into the plastic container for disposal.
- Another technique is to use an index card or rubber squeegee to collect the mercury droplets into a pile or dirty pool that can be sucked up with a capillary eyedropper or a hand-operated vacuum pump.
- Darken the room and look very closely, using a flashlight held at floor (or contaminated surface) level shining across the surface to illuminate the smaller beads. Mercury beads will often be pinhead size, or smaller. Pay close attention to cracks and crevices that may hide small beads of mercury.
- Wipe down all surfaces with a 3% solution of Nitric Acid in water to remove residual traces of mercury, again beginning at the outer perimeter of the spill. Then wash down all surfaces with diluted stock detergent to remove the Nitric Acid.
- Place sponges, used powder, index cards, gloves shoe covers, and anything used for the cleanup into a plastic bag for disposal. Place the Nitric Acid clean up solutions in a appropriate container. Do not mix these items with any free mercury you may have collected. Seal and label the bag and container, with Hazardous Waste, Mercury Spill Cleanup Materials, and Date. Call Environmental Health and Safety to arrange for disposal.



- If there are any concern that the mercury may not be completely removed, take steps to keep others from entering or spreading the mercury at the spill site, and call Environmental Health and Safety for assistance.

Complex Mercury Spills

- If the spill is determined to be a complex spill, it should be cleaned-up by qualified personnel only. Laboratory staff should call Environmental Health and Safety immediately.
- Evacuate the immediate area of the spill, and isolate the spill area to prevent people from entering or spreading the mercury from the spill site.
- Environmental Health and Safety will complete an incident report describing the site, how the spill occurred, estimated quantity spilled and any other pertinent information. Record the names of all people who may have been exposed to the spill. Determine the name of the Principal Investigator or Supervisor for the area, and the Researcher. If conditions and exposures warrant, instruct persons who were in contact with the spilled mercury to make an appointment with a doctor to receive a medical examination for mercury exposure.
- Wear disposable booties to prevent contamination and an appropriate respirator when entering the spill area to make an assessment. An appropriate respirator shall be worn at all times, unless air sampling determines the mercury vapor level to be consistently below 0.025 mg/m³
- Determine if the air handling system has been isolated. The system can be isolated by blocking the return vents, closing the doors and opening a window, or leaving an exhaust hood operating. If necessary call the Facilities Department for assistance in isolating the ventilation if necessary.
- If there are large beads or puddles of free mercury, cover these with mercury absorbing powder and mist to dampen and form a solid mercury-metal amalgam. Beads or puddles of mercury may be recovered with a capillary eyedropper or hand-operated vacuum pump. After most of the free mercury is recovered or amalgamated, dust the entire isolation area with mercury vapor adsorbing powder. These steps will control further spread of the mercury, and minimize the release of mercury vapor during the clean-up phase.
- Environmental Health and Safety will evaluate the spill and determine if it can be properly cleaned by qualified Bucknell personnel or if an emergency response contractor must be called.



Reporting of Mercury Spills

The following information must be reported to Environmental Health and Safety concerning any mercury spill:

- Name of person reporting the spill
- Date, Time and Location of the incident
- Phone number where the reporting person can be reached
- Brief description of the incident
- Phone numbers where any other persons involved can be reached.