



**Applies to mercury spills of less than one tablespoon** - contact a professional spill remediation contractor with experience in mercury cleanup for spills greater than one tablespoon. One tablespoon (15 ml) of mercury weighs about a half of a pound.

Spills of one pound (two tablespoons) or more must be reported to the National Response Center at 1-800-424-8802 and the Colorado Department of Public Health and Environment (1-877-518-5608) immediately. In addition, a release of any quantity of mercury that has or may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) must be reported to the Colorado Department of Public Health and Environment immediately.

Mercury spills can be very hazardous to human health and the environment if not cleaned up as soon as possible. Elemental mercury vaporizes slowly over time and can expose you and your employees to toxic fumes for a very long time if not thoroughly cleaned up.

### **General Instructions**

- **Evacuate the spill area.** Ensure that people's shoes, clothing and other items do not have any mercury on them before they are allowed to leave the area. Restrict entry to the area to only those necessary to clean up the spill.
- **Isolate the spill area.** The affected room should be isolated from other rooms in the building by closing interior doors leading to other inside areas. Open exterior doors and windows for ventilation. Use fans to circulate the air in the spill area before, during and after cleanup.
- **Turn off ventilation systems.** The heating and air conditioning system, and any other circulation systems that could circulate air from the spill area to other parts of the building, should be turned off. Mercury vaporizes at room temperature and is readily absorbed through the lungs. These vapors are odorless and colorless.
- **Contain the spill.** Prevent the mercury from spreading onto sloping or porous surfaces. Do not allow mercury near drains, cracks or crevices.
- **Leave the room** to ventilate for at least 15 minutes before starting cleanup procedures.
- **Retrieve your mercury spill kit.** If you don't have a commercially available mercury spill kit, you can assemble one using common items including:
  - eye dropper or syringe without needle
  - safety glasses or goggles
  - rubber, latex or nitrile gloves
  - small plastic container with lid (like a 35-mm film canister)
  - slightly larger plastic container with lid
  - flashlight or high intensity lamp
  - index cards or rubber squeegee
  - small plastic dustpan
  - masking tape, scotch tape or duct tape
  - zip-top plastic bags
  - powdered zinc
  - paper towels
  - plastic bucket or tray
  - strong plastic trash bags (2-6 mils thick)

- **Wear protective clothing.** Change into old clothes and shoes that can be discarded if they become contaminated, or keep a supply of disposable protective clothing and shoe covers on hand. Remove all jewelry before beginning cleanup as the mercury will bind to gold and silver. Put on gloves and safety glasses or goggles. Since some of these items may need to be disposed of after you have completed cleanup of the spill, place clean clothes, shoes and a trash bag just outside the room where the mercury spill occurred.
- **Clean up the mercury spill.** Follow the guidance below that is appropriate for the type of spill you have.
- **Bag contaminated clothing and used cleanup tools.** After cleaning up the spill, carefully remove your gloves by grasping them at the wrist and pulling them off inside-out. Place the gloves in a trash bag for disposal. If you were wearing disposable coveralls and booties, carefully remove these items and place them in the trash bag. Any clothing or shoes that came in direct contact with the mercury should be placed in the trash bag. Clothing and shoes that did not come into direct contact with the mercury should be placed outdoors to air out. Once thoroughly aired out, the clothing can be laundered as normal and the shoes wiped off with damp paper towels. Put the used paper towels in the trash bag. Single-use tools used to clean up the spill should be placed in the trash bag. The trash bag should be double-bagged in a second trash bag. Label the outer bag as "Hazardous Waste - Mercury." Multi-use tools that came in contact with the mercury should be thoroughly cleaned with an anionic (alkaline) detergent, dried and then sealed in a heavy duty zip-top bag to prevent the potential release of residual mercury vapors. Unused tools and cleaned multi-use tools may be returned to your spill kit.
- **Dispose of properly.** DO NOT place mercury or mercury-contaminated wastes in the regular trash. These wastes must be managed and disposed of as hazardous waste. In-state hazardous waste disposal companies can be found in the yellow pages or online, generally under a listing for "waste disposal – hazardous." In addition, there are out-of-state disposal companies that specialize in mercury waste disposal. Some of these companies offer pre-paid services that include the shipping container, return freight, mercury recycling and limited recordkeeping. A partial list of out-of-state companies is available on our website at [www.colorado.gov/cs/Satellite/CDPHE-HM/CBON/1251615961696](http://www.colorado.gov/cs/Satellite/CDPHE-HM/CBON/1251615961696) .
- **Monitor spill area for mercury vapors.** Even if the area looks clean, there may be residual mercury. It may be necessary to monitor mercury vapor levels in the affected room with a direct reading mercury vapor meter. If mercury is detected, re-clean the impacted area and repeat air monitoring until mercury vapor concentrations return to a safe level.

**Never** use a household-type vacuum cleaner (even one with a HEPA filter), broom or any type of cotton towel to try to wipe or blot up the spill since it will only scatter and spread the mercury. Special mercury vacuums are available for a fee from some spill remediation contractors, but advanced training is required to operate them properly.

**Never** use household cleaning products to clean the spill, particularly products that contain ammonia or chlorine. These chemicals will react violently with mercury, releasing a toxic gas.

## Liquid Spills on Hard Surfaces

If the spill occurred on a hard surface, such as a counter or non-carpeted floor, the mercury probably shattered into tiny beads and spread in many directions.

- **Determine the extent of the spill.** Hold a flashlight at an angle to the surface to determine the extent of the spill. The beads will reflect light from the flashlight. Check a large area around the spill and pay special attention to surface cracks, crevices and other hard to reach areas.
- **Gather up all visible mercury.** Use an index card or rubber squeegee to gather the mercury beads together. Start at the outer edges of the spill and push all of the material toward the center of the spill area. Scoop the mercury up using the index card or squeegee and dustpan (DO NOT use a broom or brush). Place the recovered mercury into the small plastic container.
  - An eyedropper or syringe can be used to pick up any remaining mercury beads that are visible. Use the flashlight to locate remaining mercury beads and tilt the eyedropper or syringe at an angle to the surface to collect the mercury. Once all of the visible beads have been collected, put the

recovered mercury into the small plastic container and seal the lid. Place the used eyedropper or syringe in a zip-top bag when finished.

- If there are very tiny beads of mercury that you can't pick up using these methods, wrap a piece of tape around your finger, sticky side out, and gently dab at the contaminated area. Place the used tape in the zip-top bag when finished.
- Put the zip-top bag in the trash bag used for contaminated clothing as described in the "General Instructions" section above.
- **Bind up residual mercury.** Sprinkle the contaminated area with zinc powder moistened with water. Use enough to cover the area with a fine layer, but don't over-apply. Rub the powder into any surface cracks and crevices with a paper towel. Use the index card or squeegee to pick up the amalgamated mercury mixture and put it into the small plastic container. Rub the area with additional paper towels until all residues are gone. Place the used paper towels and index card or squeegee in a zip-top bag. Put the zip-top bag in the trash bag used for contaminated clothing as described in the "General Instructions" section above.
  - Zinc powder binds with mercury to form a safer amalgam and helps ensure that you recover as much mercury as possible. The powder can be obtained at many safety equipment suppliers. You may also use a commercially available mercury spill powder containing sodium thiosulfate and finely powdered EDTA (ethylenediaminetetraacetic acid). If you use a commercial powder, follow the instructions provided on the container.
  - Do not use sulfur powder as this amalgam is very difficult and expensive to dispose of.
- **Check carefully for remaining mercury.** Use the flashlight to check for any remaining mercury beads.
- **Seal the mercury waste container.** Place the small plastic container inside the larger plastic container to provide additional containment. Seal each lid securely so that the mercury and its vapors will be contained. Place the sealed containers into a large zip-top plastic bag and seal. Label the outer bag "Hazardous Waste - Mercury." Follow the disposal instructions in the "General Instructions" section above.
- **Turn on ventilation systems.** Turn the heating and air conditioning system and any other circulation systems back on, but keep the interior doors to this room closed. Exterior windows or doors should be left open for at least a few hours, 24 - 48 hours would be best.

### Liquid Spills on Carpeted Surfaces

If the spill occurred on a carpeted surface, it is almost impossible to effectively pick up the mercury.

- **Determine the extent of the spill.** Hold the flashlight at an angle to the surface to determine the extent of the spill. The beads will reflect light from the flashlight. Check a large area around the spill.
- **Remove the contaminated carpet.** Carefully cut out the contaminated section of carpet using a utility knife. Take care not to tilt or shake the carpet any more than necessary to minimize the spread of mercury. Gently place the contaminated carpet into a trash bag. Double wrap this trash bag in another trash bag for disposal. Label the outer bag "Hazardous Waste - Mercury." Follow the disposal directions in the "General Instructions" section above.
- **Check carefully for remaining mercury.** Use the flashlight to check for any remaining mercury beads in the adjacent carpet and the bare sub-floor. If necessary, clean the sub-floor following the instructions for hard surfaces above.
- **Turn on ventilation systems.** Once there appears to be no visible mercury on the carpet, turn the heating and air conditioning system back on, but keep the interior doors to this room closed. Exterior windows or doors should be left open for at least a few hours, 24 - 48 hours would be best.

### Liquid Spills Down a Drain

Since mercury is heavier than water, it will likely accumulate in the S-trap of a drain. The slow dissolution of the mercury in a sink trap can release mercury into the air and wastewater system for many years.

- **Remove the sink trap.** Working over a tray or bucket, carefully remove the sink trap and pour the contents into the tray or bucket.

- **Recover the mercury.** After allowing it to settle, gently remove as much water as possible without disturbing the mercury. Use an eyedropper or syringe to recover all of the mercury. Place the recovered mercury into a small plastic container and seal the lid. Place the used eyedropper or syringe in a zip-top bag when finished. Put the zip-top bag in the trash bag used for contaminated clothing as described in the “General Instructions” section above.
- **Seal the mercury waste container.** Place the small plastic container inside the larger plastic container to provide additional containment. Seal each lid securely so that the mercury and its vapors will be contained. Place the sealed containers into a zip-top plastic bag and seal. Label the outer bag "Hazardous Waste - Mercury." Follow the disposal directions in the “General Instructions” section above.
- **Reassemble the sink trap.** Replace the sink trap and dispose of the remaining water.
- **Turn on ventilation systems.** Turn the heating and air conditioning system back on, but keep the interior doors to this room closed. Exterior windows or doors should be left open for at least a few hours, 24 - 48 hours would be best.

### **Broken Fluorescent, Compact Fluorescent or Other Mercury-Containing Light Bulbs**

Fluorescent light bulbs contain a small amount of mercury sealed within the glass tubing. Although bulb manufacturers have reduced the amount of mercury in fluorescent bulbs, a certain amount is necessary for the bulb to function.

- While minimizing contact with the spill area, pick up any large pieces of glass from the broken bulb and place them on a paper towel. Carefully fold the paper towel around the broken glass and put it in a zip-top bag. If you use a drum top bulb crusher for general recycling of your fluorescent bulbs, you may add the broken glass to the drum as long as you are able to feed the pieces through the fill tube. **DO NOT** remove the drum top crusher to add the broken glass to the drum as this unnecessarily releases mercury into the ambient air.
- Wrap a piece of masking tape, scotch tape or duct tape around your finger, sticky side out, and gently dab at the contaminated area to pick up the remaining glass fragments and powder. Place the tape in the zip-top bag when finished.
- If the bulb broke on a hard surface, wipe the area clean with a damp paper towel and place the used paper towel in the zip-top bag.
- Put the zip-top bag in the trash bag used for contaminated clothing as described in the “General Instructions” section above.
- If the bulb broke on the carpeting or a rug, you may vacuum the area where the bulb was broken after you have picked up all glass fragments and powder that you can with sticky tape.
- Remove the vacuum bag and put it into a trash bag. If the vacuum is a canister-type with no vacuum bag, empty the contents of the canister into a trash bag, wipe the canister with a damp paper towel, and put the paper towel into the trash bag. Put this trash bag into the trash bag used for contaminated clothing as described in the “General Instructions” section above.
- Shut off the heat and any air circulation systems and open a window before vacuuming for the next several times you vacuum. Keep the heat and air circulation systems off and the window open for at least 15 minutes after vacuuming is completed.

### **For more information, please contact:**

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