

Cleaning Up Small Mercury Spills

Less Than 2 Tablespoons



Due to mercury's volatility and potential for inhalation, spilled mercury should be cleaned up as quickly and thoroughly as possible.



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Michigan Department of Environmental Quality 800-662-9278

John Engler, Governor
Russell J. Harding, Director
www.deq.state.mi.us/eqd

For spills of less than two tablespoons:

1. **EVACUATE THE SPILL AREA:** Before people leave, be sure that their shoes, clothing, and other articles have not been splashed with mercury. Secure the scene (use barrier tape if necessary) and restrict admission to only those persons necessary to clean up the spill. Children and pets should be kept clear of the spill area.
2. **LOWER the TEMPERATURE** by turning down the thermostat. The cooler the temperature, the less mercury vapors that will be released into the air. [For example, a temperature increase from 64.4°F to 78.8°F will double mercury's vapor pressure.] Remember that mercury vapors are odorless and colorless.
3. **TURN OFF VENTILATING OR AIR CONDITIONING SYSTEMS** that could circulate air from the spill area to other parts of the building
4. **CLOSE INTERIOR DOORS** leading to other inside areas and open exterior doors and windows.



CAUTION: Mercury vapors are readily absorbed through the lungs into the bloodstream and are, therefore, particularly hazardous. In extreme situations, even very small amounts of metallic mercury (several drops) may raise air concentrations to

levels that may be harmful to human health. Mercury vapors are also heavier than air and may linger in higher concentrations close to the floor. Children that crawl or play in these areas are at highest risk to exposure.

5. **DETERMINE IF THE SPILL MUST BE REPORTED** under federal, state, or local reporting requirements. **NOTE:** It is recommended that any mercury spill equal to or greater than 1 pound (more than two tablespoons) impacting the environment, i.e., groundwater and surface water, or that threatens public health, be reported immediately.
6. **CONTAIN THE SPILL:** Surround or block off the mercury to keep it from spreading onto sloped or porous surfaces. Divert all mercury away from floor drains, cracks, or crevices that may impact groundwater, surface water, and soils.
7. **VENTILATE THE ROOM** to the outdoors. (Use fans to force air circulation for a minimum of one hour after clean up). In an office building, increase the air exchange rate for one day. *The danger of mercury exposure is greatest in small, confined, poorly ventilated areas. Avoid*

20. **CONTINUE VENTILATION** to completely air out the room or spill zone with outside air for a minimum of two days, preferably longer.
21. **REPLACE BROKEN DEVICE WITH A 'MERCURY-FREE' ALTERNATIVE:** For a detailed listing of mercury-containing devices and alternatives see: [Ref: www.deq.state.mi.us/ead/p2sect/mercury]
22. **INVENTORY ALL REMAINING MERCURY-CONTAINING DEVICES AND REPLACE THEM WITH MERCURY FREE ALTERNATIVES:** The best way to address a mercury spill is to prevent it from ever happening in the first place. For additional pollution prevention ideas and assistance contact the DEQ's Environmental Assistance Center at 800-662-9278.

MERCURY SPILL CLEAN UP KITS

Abatix Environmental Supply	253-872-6955
Advanced Environmental Solutions	253-872-6955
Fisher Scientific	800-766-7000
Flinn Scientific	800-452-1261
Mallinckrodt/Baker (manufactures several spill kits)	800-852-2537
Lab and Safety Supply	800-356-0783
Safety Essentials Catalog	
Safety Tech Line	800-356-2501
Lamp Recyclers of Louisiana, Inc. sells a Mercury 'Magnet' Spill Kit.	800-309-9908
Sanderson Safety Supply Co.	206-340-4300
VWR Scientific	800-932-5000

DISCLAIMER

The list of mercury equipment suppliers above was compiled by the Environmental Assistance Division of DEQ to provide information about potential sources of mercury remediation equipment. The quality of service provided by each company is not known or implied by this listing. The Environmental Assistance Division does not recommend or endorse the products of any particular company listed herein, does not inspect these facilities, and does not represent that the companies are, or are not, in compliance with applicable federal and state environmental laws.

NOTE: Everything used during the cleanup procedure will need to be managed as 'HAZARDOUS WASTE,' unless you are positive it has NOT come into contact with mercury.

Although households are legally exempt from the hazardous waste regulations, it is recommended you seek disposal advice from your local county environmental health department or by contacting one of the "resource entities" listed on the DEQ's mercury home page.

[Ref: www.deq.state.mi.us/ead/p2sect/mercury]

In many areas, mercury-contaminated articles may be taken to a nearby household hazardous waste (HHW) collection center. For a complete listing of HHW collection centers consult:

[Ref: www.deq.state.mi.us/wmd/docs/swprogram/hhwlist.html]

It is recommended you call first to explain your situation and schedule an appointment.

WHEN ARTICLES ARE MIXED WITH HAZARDOUS WASTE, EVERYTHING BECOMES HAZARDOUS!



18. MONITOR SPILL ZONE FOR MERCURY VAPORS:

Even if the impacted area appears clean, there may still be hidden residual quantities of mercury present that emit vapors. For larger-sized spills, it may be necessary to monitor (test) mercury vapor levels in the immediate area. If mercury is detected, re-clean the impacted area using previously mentioned procedures and repeat testing until levels fall to within safe parameters ($.3\mu\text{g}/\text{m}^3$; recommended in-home cleanup guideline). NOTE: This recommendation would NOT normally be necessary for incidents involving the breakage of typical (standard-size) mercury fever thermometers.

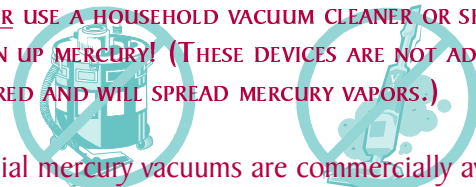
For larger spills in sensitive areas (bedrooms or poorly ventilated, confined areas), a direct reading mercury vapor meter may be used to detect the presence of mercury. In *extreme* (human exposure) situations, mercury monitoring (testing) of blood plasma or urine might also be deemed necessary. Consult your doctor, local county environmental health department, or the Michigan Department of Community Health (800-MI-Toxic) for further guidance and assistance.

19. WASH HUMANS AND ANIMALS EXPOSED TO MERCURY

using an alkaline soap (i.e., Lava soap) and a paste of water and flowers of sulfur. Flowers of sulfur can be found in most garden supply shops and will turn the mercury into an insoluble sulfide. Afterwards, the remaining residue should be thoroughly rinsed. All wash water containing mercury should be collected and kept out of the sanitary sewer system.

breathing any dust, vapors, mist, or gas. Avoid contact with eyes, skin, and clothing.

NEVER USE A HOUSEHOLD VACUUM CLEANER OR SHOP VAC TO CLEAN UP MERCURY! (THESE DEVICES ARE NOT ADEQUATELY FILTERED AND WILL SPREAD MERCURY VAPORS.)



Special mercury vacuums are commercially available for larger spills but require advanced training to operate properly. When necessary, they may be obtained by contacting local universities or environmental health departments or provided for a fee by professional spill remediation contractors.

8. ASSEMBLE CLEAN UP SUPPLIES or obtain a mercury spill kit. Mercury spill kits are commercially available and convenient, but not absolutely necessary to clean up a small mercury spill.

The following are some common household articles that could be used to construct an in-home mercury cleanup kit:

- eye dropper
- goggles
- paper towel
- plastic container with lid
- plastic sheeting
- powdered zinc *2
- rubber squeegee
- tape; wide, duct, or masking
- tray or box
- flashlight
- napkins
- plastic bags with zipper seal
- plastic dust pan
- powdered sulfur *1
- rubber gloves
- syringe without needle
- trash bags
- wide mouth container

*1- visualizes mercury by turning from yellow to brown and forms mercuric sulfide. Dusting the area with this powder also reduces mercury vapors.

*2- amalgamates (bonds with) mercury.

NOTE: Used items are to be double-bagged and disposed of in accordance with state and local requirements.

9. DRESS APPROPRIATELY: Remove all jewelry from hands and wrists so the mercury does not combine (amalgamate) with the precious metals. Change into old clothes and shoes that can be safely discarded should they happen to become contaminated. Put on rubber gloves and goggles or safety glasses.

NEVER USE A BROOM ON A MERCURY SPILL BECAUSE IT WILL ONLY SCATTER THE MERCURY DROPLETS, MAKING THEM HARDER TO FIND AND PICK UP.



10. PICK UP ALL VISIBLE MERCURY DROPLETS: Inspect the spill zone with a bright light to help illuminate any hidden droplets. Clean up any metallic beads of mercury by using a plastic squeegee or index card and plastic dust pan. With the index or plastic card, sweep the mercury toward the center of the spilled area away from any carpet, fabric, or porous surfaces. Carefully combine and consolidate the mercury droplets. Next, slide droplets onto a sheet of rigid paper like an index card.

11. NEXT, GENTLY TRANSFER MERCURY INTO AN UNBREAKABLE PLASTIC CONTAINER like a 35mm film canister with a locking or air tight lid (avoid using glass). If necessary, suction off the droplets using an eye dropper or syringe. Adhesive tape strips may also be used to clean up any tiny remaining mercury droplets. Place the plastic container inside a second plastic container to provide additional containment protection. Tighten each lid securely so that liquid and vapors will be contained.

12. PLACE THE MERCURY WASTE CONTAINER(S) INTO A ZIP-TOP PLASTIC BAG: This should ensure that in the event of any leakage, all mercury will be safely contained within the packaging. Label the package "Elemental Mercury Waste, [Hazardous]," and store in a secure place away from children. Contact your local health department or the Michigan Department of Environmental Quality (DEQ) to obtain a list of disposal locations. [Ref: www.deq.state.mi.us/ead/p2sect/mercury]

NEVER POUR LIQUID MERCURY OR MERCURY COMPOUNDS DOWN THE DRAIN. SINCE MERCURY IS HEAVIER THAN WATER, IT WILL ACCUMULATE IN THE S-TRAP OF YOUR DRAIN AND MAY CONTINUE TO EMIT HARMFUL VAPORS.

13. REMOVE and DISPOSE OF CONTAMINATED CARPETING or other articles that have directly contacted mercury. It may be necessary to remove contaminated carpet from the room where the spill incident occurred. Double or triple wrap these remnants in plastic trash bags and contact your local waste department for proper disposal. (Do NOT expose to heat or incinerate.)

Special precautions should be taken if mercury was spilled in a high traffic area or a confined area where children or infants play. Young children playing on the floor are particularly at risk to mercury's effects on the central nervous system. If this sounds like your situation, discuss the incident with your family doctor to determine whether additional mercury testing should be conducted for your family. In extreme instances, additional measures may be recommended.

14. SPRINKLE FINE POWDER SULFUR OR ZINC ON THE SPILL SITE to bind any remaining mercury. This may be supplied in mercury spill kits as mercury vapor absorbent or purchased separately from garden supply stores or chemical supply houses. Apply over hard to reach areas such as cracks and crevices to minimize the release of mercury vapors. In instances where furniture has been exposed to mercury, wash fabric thoroughly and allow all items to air out completely. Mercury may lodge in porous areas like carpet backing or cracks and crevices.

15. CHECK CAREFULLY FOR MISSED MERCURY: To aid in detection, a high intensity lamp may be used to better illuminate the spill area. The presence of scattered mercury droplets may also be detected by a sodium sulfide solution, which can be obtained from most chemical supply houses. This solution may also be sprayed on an affected person (but NOT the eyes, mucous membranes, or the mouth). Any mercury present will show up as dark, reddish brown stains. Residual mercury may then be uplifted using a variety of techniques including vinegar wash followed by hydrogen peroxide. To combat any hydrogen sulfide odors generated from mixing the two chemicals, an alternate method would be to wipe the area with a vinegar-soaked swab, followed by a peroxide wipe.

16. SET ASIDE EVERYTHING YOU THINK MIGHT BE CONTAMINATED WITH MERCURY: Package materials securely and label as "Elemental Mercury: Hazardous Waste." Specific labeling and disposal requirements may differ depending on whether the spill occurred at a household or at a 'regulated business.' See: DEQ Waste Management Division (WMD) Internet site or contact WMD district staff for details. Then contact your local health department or DEQ to obtain a list of possible disposal locations.

[Ref: www.deq.state.mi.us/ead/p2sect/mercury]

NEVER PLACE HEAVILY MERCURY-LADEN FABRICS IN A WASHING MACHINE.

17. DO NOT PLACE MERCURY-CONTAMINATED SUBSTANCES IN THE TRASH unless otherwise instructed to do so by proper authorities. This is especially important if your trash goes to an incinerator (municipal waste combustor). Contact the DEQ, your local county health department, or household hazardous waste collection program for proper disposal suggestions.