



Mercury

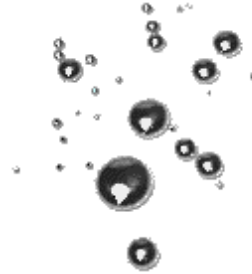
<http://www.epa.gov/mercury/spills/index.htm#fluorescent>
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Mercury Releases and Spills

Cleanups and Proper Disposal

Humans use mercury in a variety of manufacturing processes and products such as thermometers and fluorescent bulbs. If you improperly dispose of products with mercury in them, they may break and release mercury vapors which are harmful to human and ecological health.



- [Dispose of used mercury-containing items properly.](#)
- [Clean up mercury spills properly and report them to the proper authorities when necessary.](#)

Releases and Spills

- [What never to do after a mercury spill](#)
- **[What to do if a fluorescent or other mercury-containing light bulb or if a thermometer breaks](#)**
- [Other mercury spills](#)
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Storing, Transporting and Disposing of Mercury

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- [Mercury Response Guidebook \(for emergency responders\)](#)

Releases and Spills

What Never to Do After a Mercury Spill

- Never use a vacuum cleaner to clean up mercury (but see the "What to Do if a Fluorescent Light Bulb Breaks" section below for more specific instructions about vacuuming broken fluorescent light bulbs). The vacuum will put mercury into the air and increase exposure.

- Never use a broom to clean up mercury. It will break the mercury into smaller droplets and spread them.
- Never pour mercury down a drain. It may lodge in the plumbing and cause future problems during plumbing repairs. If discharged, it can cause pollution of the septic tank or sewage treatment plant.
- Never wash clothing or other items that have come in direct contact with mercury in a washing machine, because mercury may contaminate the machine and/or pollute sewage. Clothing that has come into direct contact with mercury should be discarded. By "direct contact," we mean that mercury was (or has been) spilled directly on the clothing. For example:
 - if you broke a mercury thermometer and some of elemental mercury beads came in contact with your clothing, or
 - if you broke a compact fluorescent bulb (CFL) so that broken glass and other material from the bulb, including mercury-containing powder, came into contact with your clothing.

You can, however, wash clothing or other materials that have been exposed to the mercury vapor from a broken CFL, like the clothing you happened to be wearing when you cleaned up the broken CFL, as long as that clothing has not come into direct contact with the materials from the broken bulb.

- Never walk around if your shoes might be contaminated with mercury. Contaminated clothing can also spread mercury around.

What to Do if a Fluorescent or Other Mercury-Containing Light Bulb Breaks

Compact fluorescent lights (CFLs) are lighting more homes than ever before, and EPA is encouraging Americans to use and recycle them safely. Carefully recycling CFLs prevents the release of mercury into the environment and allows for the reuse of glass, metals and other materials that make up fluorescent lights.

EPA is continually reviewing its clean-up and disposal recommendations for CFLs to ensure that the Agency presents the most up-to-date information for consumers and businesses. Maine's Department of Environmental Protection released a [CFL breakage study report](#) [EXIT Disclaimer](#) on February 25, 2008. EPA has conducted an initial review of this study and, as a result of this review, we have updated the CFL cleanup instructions below.

Pending the completion of a full review of the Maine study, EPA will determine whether additional changes to the cleanup recommendations are warranted. The agency plans to conduct its own study on CFLs after thorough review of the Maine study.

Fluorescent light bulbs contain a very small amount of mercury sealed within the glass tubing. EPA recommends the following clean-up and disposal below. Please also read the [information on this page about what Never to Do After a Mercury Spill](#).

Before Clean-up: Air Out the Room

- Have people and pets leave the room, and don't let anyone walk through the breakage area on their way out.
- Open a window and leave the room for 15 minutes or

more.

- Shut off the central forced-air heating/air conditioning system, if you have one.

Clean-Up Steps for Hard Surfaces

- Carefully scoop up glass pieces and powder using stiff paper or cardboard and place them in a glass jar with metal lid (such as a canning jar) or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder.
- Wipe the area clean with damp paper towels or disposable wet wipes. Place towels in the glass jar or plastic bag.
- Do not use a vacuum or broom to clean up the broken bulb on hard surfaces.

Clean-up Steps for Carpeting or Rug

- Carefully pick up glass fragments and place them in a glass jar with metal lid (such as a canning jar) or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder.
- If vacuuming is needed after all visible materials are removed, vacuum the area where the bulb was broken.
- Remove the vacuum bag (or empty and wipe the canister), and put the bag or vacuum debris in a sealed plastic bag.

Clean-up Steps for Clothing, Bedding and Other Soft Materials

- If clothing or bedding materials come in direct contact with broken glass or mercury-containing powder from inside the bulb that may stick to the fabric, the clothing or bedding should be thrown away. Do not wash such clothing or bedding because mercury fragments in the clothing may contaminate the machine and/or pollute sewage.
- You can, however, wash clothing or other materials that have been exposed to the mercury vapor from a broken CFL, such as the clothing you are wearing when you cleaned up the broken CFL, as long as that clothing has not come into direct contact with the materials from the broken bulb.
- If shoes come into direct contact with broken glass or mercury-containing powder from the bulb, wipe them off with damp paper towels or disposable wet wipes. Place the towels or wipes in a glass jar or plastic bag for disposal.

Disposal of Clean-up Materials

- Immediately place all clean-up materials outdoors in a trash container or protected area for the next normal trash pickup.
- Wash your hands after disposing of the jars or plastic bags containing clean-up materials.
- Check with your local or state government about disposal requirements in your specific area. Some states do not allow such trash disposal. Instead, they require that broken and unbroken mercury-containing bulbs be taken to a local recycling center.

Future Cleaning of Carpeting or Rug: Air Out the Room During and After Vacuuming

Types of Mercury-Containing Bulbs

- Fluorescent bulbs, which include linear, U-tube and circline fluorescent tubes, bug zappers, tanning bulbs, black lights, germicidal bulbs, high output bulbs, cold-cathode fluorescent bulbs, and compact fluorescent bulbs;
- High intensity discharge bulbs, which include metal halide, ceramic metal halide, high pressure sodium, and mercury vapor;
- Mercury short-arc bulbs; and
- Neon bulbs.

Learn more about...

- Types of fluorescent bulbs
- Which light bulbs contain mercury, and how fluorescent and other mercury-containing bulbs work [EXIT Disclaimer](#)
- Recycling and disposal options for mercury-containing bulbs
- Bulb recycling programs in your area
- Compact fluorescent bulbs that earn the government's ENERGY STAR

- The next several times you vacuum, shut off the central forced-air heating/air conditioning system and open a window before vacuuming.
- Keep the central heating/air conditioning system shut off and the window open for at least 15 minutes after vacuuming is completed.

What to Do if a Mercury Thermometer Breaks

NOTE: these instructions also apply to spills from other sources, if the amount spilled is less than or similar to the amount in a thermometer (see specific information above about how to clean up broken fluorescent bulbs)

[Find out whether your state sponsors a thermometer exchange or recycling program](#)

- Have everyone else leave the area; don't let anyone walk through the mercury on their way out. Make sure all pets are removed from the area. Open all windows and doors to the outside; shut all doors to other parts of the house.
- DO NOT allow children to help you clean up the spill.
- Mercury can be cleaned up easily from the following surfaces: wood, linoleum, tile and any similarly smooth surfaces.
- If a spill occurs on carpet, curtains, upholstery or other absorbent surfaces, these contaminated items should be thrown away in accordance with the disposal means outlined below. Only cut and remove the affected portion of the contaminated carpet for disposal.

Items needed to clean up a small mercury spill

1. 4-5 ziplock-type bags
2. trash bags (2 to 6 mils thick)
3. rubber, nitrile or latex gloves
4. paper towels
5. cardboard or squeegee
6. eyedropper
7. duct tape, or shaving cream and small paint brush
8. flashlight
9. powdered sulfur (optional)

Cleanup Instructions

1. Put on rubber, nitrile or latex gloves.
2. 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 zip lock bag. Secure the bag and label it as directed by your local health or fire department.
3. Locate visible mercury beads. Use a squeegee or cardboard to gather mercury beads. Use slow sweeping motions to keep mercury from becoming uncontrollable. Take a flashlight, hold it at a low angle close to the floor in a darkened room and look for additional glistening beads of mercury that may be sticking to the surface or in small cracked areas of the surface. Note: Mercury can move surprising distances on hard-flat surfaces, so be sure to inspect the entire room when "searching."

4. Use the eyedropper to collect or draw up the mercury beads. Slowly and carefully squeeze mercury onto a damp paper towel. Place the paper towel in a zip lock bag and secure. Make sure to label the bag as directed by your local health or fire department.
5. After you remove larger beads, put shaving cream on top of small paint brush and gently "dot" the affected area to pick up smaller hard-to-see beads. Alternatively, use duct tape to collect smaller hard-to-see beads. Place the paint brush or duct tape in a zip lock bag and secure. Make sure to label the bag as directed by your local health or fire department.
6. **OPTIONAL STEP:** It is **OPTIONAL** to use commercially available powdered sulfur to absorb the beads that are too small to see. The sulfur does two things: (1) it makes the mercury easier to see since there may be a color change from yellow to brown and (2) it binds the mercury so that it can be easily removed and suppresses the vapor of any missing mercury. Where to get commercialized sulfur? It may be supplied as mercury vapor absorbent in mercury spill kits, which can be purchased from laboratory, chemical supply and hazardous materials response supply manufacturers. **Note:** Powdered sulfur may stain fabrics a dark color. When using powdered sulfur, do not breathe in the powder as it can be moderately toxic. Additionally, users should read and understand product information before use.
7. If you choose not to use this option, you may want to request the services of a contractor who has monitoring equipment to screen for mercury vapors. Consult your local environmental or health agency to inquire about contractors in your area. Place all materials used with the cleanup, including gloves, in a trash bag. Place all mercury beads and objects into the trash bag. Secure trash bag and label it as directed by your local health or fire department.
8. Contact your local health department, municipal waste authority or your local fire department for proper disposal in accordance with local, state and federal laws.
9. Remember to keep the area well ventilated to the outside (i.e., windows open and fans in exterior windows running) for at least 24 hours after your successful cleanup. Continue to keep pets and children out of cleanup area. If sickness occurs, seek medical attention immediately. [View information on health effects related to exposures to vapors from metallic mercury](#). For additional information on health effects, the Agency for Toxic Substances and Disease Registry (ATSDR) provides a [Mercury Fact Sheet](#) [EXIT Disclaimer](#) that also presents information on health effects related to exposures to vapors from metallic mercury.

Recommendation: If there are young children or pregnant women in the house, seek additional advice from your local or state health or [state environmental agency](#).

Spills of More than the Amount in a Thermometer, but Less Than or Similar to Two Tablespoons (One Pound)

Cleanup Instructions

1. Have everyone else leave the area; don't let anyone walk through the mercury on their way out.
2. Open all windows and doors to the outside.
3. Turn down the temperature.

4. Shut all doors to other parts of the house, and leave the area.
Don't vacuum.
5. Call your local or state health or environmental agency.

Spills of More than Two Tablespoons (One Pound)

Any time one pound or more of mercury is released to the environment, it is mandatory to call the [National Response Center \(NRC\)](#). The NRC hotline operates 24 hours a day, 7 days a week. Call (800) 424-8802. Note that because mercury is heavy, only two tablespoons of mercury weigh about one pound.

Related State Links

Many states provide more detailed step-by-step instructions on how to contain a mercury spill and, in the case of small spills, how to clean it up yourself, as well as on available cleanup contractors and proper disposal of collected mercury. Examples are:

The external links below will take you out of the EPA.gov domain [EXIT Disclaimer](#).

More on Safe Mercury Management

State Mercury Medical/Dental Waste Programs

State and Local Mercury Collection/Recycling/Exchange Programs

State Mercury School Programs

- [Basic Questions Dealing with Mercury Spills](#)
Illinois Department of Public Health
- [Mercury Spill Information and Cleanup Guidance \(PDF\)](#) (5 pp, 87K, [About PDF](#))
Indiana Department of Environmental Management (IDEM)
- [Guidelines for the Safe Cleanup of Mercury Spilled in the Home \(PDF\)](#) (4 pp, 29K, [About PDF](#))
New Jersey Department of Health
- [Cleaning Up Small Mercury Spills](#)
Michigan Department of Environmental Quality

Storing, Transporting and Disposing of Mercury

What to Do if You Have Mercury in Your Home

Many people have containers of elemental mercury in their homes left over from science projects or other sources. If you have elemental mercury in your home, you need to exercise extreme caution with it and package it to prevent any leaks or spills. See the next two sections of this page to find how to package, transport and dispose of mercury.

Packaging Mercury for Storage and Transportation

- All mercury-containing products or containers of mercury should be placed inside a larger container with a tight fitting lid.
- Kitty litter or oil-absorbent matter should be placed around the product to protect it from breaking or sudden shocks.
- Clearly label storage container as "Mercury - DO NOT OPEN."

- If you must wait for a hazardous waste collection day, store products safely in their original containers with the labels intact, and keep them out of reach of children and pets.
- Transport container to a household hazardous collection center in a cardboard box. Secure them so that they do not tip over. This will minimize shifting or sliding during sudden stops or turns.
- Transport containers in the back of a pick-up truck or in a car trunk. If you must transport in the passenger compartment, make sure there is adequate ventilation.

Recycling and Disposal Options

Many states and local agencies have developed [collection/exchange programs for mercury-containing devices](#), such as thermometers, manometers, and thermostats, and [recycling programs for fluorescent light bulbs](#). Some counties and cities also have household hazardous waste collection programs. For information about these programs, contact your local officials to find out when and where a collection will be held in your area. [Earth911](#) also provides [information about local collection programs](#). [EXIT Disclaimer](#) For compact fluorescent lights (CFLs) only, [The Home Depot launched an in-store CFL recycling program \(PDF\)](#) (2 pp., 32K, [About PDF](#)) at all of its store locations in June 2008.

Households are generally exempt from Resource Conservation and Recovery Act (RCRA) regulations that govern the transportation, storage and disposal of hazardous wastes that contain mercury, but small and large businesses and industries are not exempt. Their mercury wastes are governed under EPA's [Land Disposal Restrictions \(LDR\) Program](#). EPA has designated some widely generated hazardous wastes, including certain spent batteries, pesticides, mercury-containing equipment and light bulbs, as "universal wastes". The [regulations that govern universal wastes](#) include special management provisions intended to facilitate the recycling of such materials. Find [more information about how households and businesses can manage, recycle and dispose of fluorescents and other mercury-containing bulbs](#).

Note that some states and local jurisdictions have elected to pass regulations that are more stringent than the federal hazardous waste regulations. Several states and municipalities do not recognize the exemption for households; others regulate all fluorescent bulbs as hazardous, regardless of their mercury content. For example, Vermont bans all mercury-containing waste from landfills, including mercury-containing waste generated by households. For more information specific to your state, contact your state or local environmental regulatory agency.

Hazardous Waste Site Cleanup

Cleaning Up Superfund and Other Hazardous Waste Sites Where Mercury is Present

At site cleanups of active facilities or abandoned hazardous waste sites, mercury presents significant environmental challenges because it is difficult to treat, exists in many different forms, is volatile, and can be difficult to analyze. Some mercury contamination sites are also

contaminated with oils, radioactive materials and organic compounds that present technical challenges.

Cleaning up mercury contamination at active facilities or at abandoned hazardous waste sites and preparing the land for redevelopment or redeployment happens in a variety of EPA programs. EPA is improving the coordination, speed, and effectiveness of cleanups at the nation's contaminated sites through the [One Cleanup Program](#). This Program is EPA's vision for how different cleanup programs at all levels of government can work together to meet that goal — and ensure that resources, activities, and results are effectively coordinated and communicated to the public. EPA accomplishes this work in partnership with state, local and tribal governments and responsible parties. For more information about the various cleanup programs managed by EPA, click on the following links:

EPA Cleanup and Redevelopment Programs

- [Superfund](#) is the Federal government's program to clean up the nation's uncontrolled hazardous waste sites.
- [RCRA Corrective Action](#) is the program responsible for the cleanup of hazardous waste contamination that may occur as a result of accidents or other activities at active facilities managing hazardous wastes. Most states are [authorized](#) to implement the Corrective Action Program, and they use it as a tool to address the cleanup and revitalization of our nation's hazardous waste sites.
- EPA's [Federal Facilities Restoration and Reuse Office](#) facilitates cleanups at federal facilities, such as Department of Defense and Department of Energy properties.
- EPA's [Brownfields program](#) facilitates assessment and cleanup of abandoned or under-utilized sites where actual or potential contamination and liability may be impeding development.
- EPA's [Technology Innovation Office](#) advocates more effective, less costly approaches (i.e. "smarter solutions") by government and industry to assess and clean up contaminated waste sites, soil, and groundwater.
- EPA's Office of Emergency Management implements portions of [The Emergency Planning and Community Right-to-Know Act \(EPCRA\)](#). EPCRA establishes requirements for federal, state and local governments, Indian tribes and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals.

Mercury Response Guidebook (for Emergency Responders)

The *Mercury Response Guidebook*, by EPA's Emergency Response Team and [EPA Region 5](#), is designed to assist emergency and remedial professionals coordinate and clean up indoor mercury spills. The principles in this guidebook can also be used at other mercury-contaminated sites.

Contents:

- [Cover, Inside Cover \(PDF\)](#) (2 pp, 2.03MB)
- [Table of Contents, Preface \(PDF\)](#) (6 pp, 1.26MB)
- [Section 1: General Information \(PDF\)](#) (3 pp, 70K)
- [Section 2: Referral \(PDF\)](#) (7 pp, 1.91MB)
- [Section 3: Reconnaissance \(PDF\)](#) (13 pp, 1.12MB)
- [Section 4: Relocation \(temporary\) \(PDF\)](#) (11 pp, 604K)
- [Section 5: Removal \(PDF\)](#) (27 pp, 3.37MB)
- [Section 6: Replacement/Reimbursement and Restoration \(PDF\)](#) (7 pp, 486K)
- [Section 7: Reoccupation \(PDF\)](#) (5 pp, 152K)

You will need the free Adobe Reader to view some of the files on this page. See [EPA's PDF page](#) to learn more.

Attachments:

- **Attachment A (PDF)**: Speech Notes on Indoor Air Quality and Elemental Mercury from Thomas A. Baughman, Ph.D. (Illinois Department of Public Health) (19 pp, 110K)
- **Attachment B (PDF)**: Guidelines for Responding to Mercury Spills and Releases in Schools and Residences (10 pp, 101K)
- **Attachment C (PDF)**: EPA letter to State EPA and Health Departments - Mercury Response Matrix (4 pp, 95K)
- **Attachment D (PDF)**: EPA Emergency Response Team's modification of the National Institute for Occupational Safety and Health (NIOSH) Method 6009 (20 pp, 559K)
- **Attachment E (PDF)**: ATSDR Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators (5 pp, 282K)