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for Environmental Health

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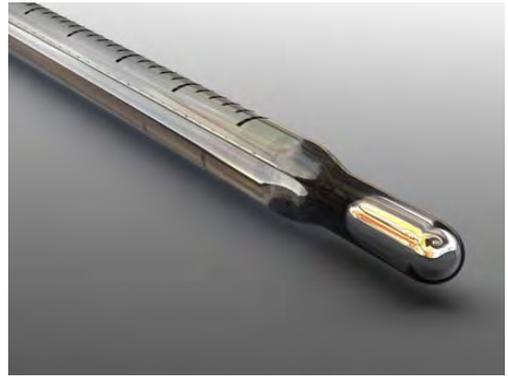
# Cleanup Instructions for Small Mercury Spills

## Introduction

Exposure to the small amount of mercury found in common household devices, such as fever thermometers, thermostats, or fluorescent light bulbs, is not likely to cause serious health problems. Humans are frequently exposed to greater quantities of mercury, much of it methyl mercury, through diet. Nevertheless, all mercury spills, regardless of quantity, should be treated seriously and cleaned up correctly.

When liquid mercury is spilled, it forms droplets. These droplets then evaporate and create a vapour that is odourless and colourless. Mercury is toxic to the human nervous system and exposure to the vapour may result in adverse health effects, if exposure is prolonged or high levels of mercury are present in the air. Small children and developing fetuses are most susceptible to the adverse effects of mercury.

The cleanup recommendations in this document are based on best management practices used by environmental health practitioners. They are derived from the experiences of individuals at the BC Centre for Disease Control and from guidelines written by other jurisdictions.



Household sources of mercury may include:

- thermometers, thermostats, barometers, electrical switches;
- medical equipment;
- light bulbs, including: fluorescent, high intensity, mercury vapor, high-pressure sodium, and metal halides;
- clock pendulums;
- toys and cards that light up or make noise;
- mercury brought home from work.

*Adapted from New Jersey State Department of Health and Senior Services. Guidelines for the safe clean-up of mercury spilled in the home. 1996 January [cited 2006 Dec 15]; Available from: <http://www.state.nj.us/health/eoh/surweb/mercho/me.pdf>*

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Small spills may be safely cleaned up by homeowners, if the cleanup is done properly. Small spills are considered to be:

- less than 1 tablespoon or 15 mL;
- confined to a small area;
- on a hard surface such as tile, linoleum, or wood;
- on a small porous item that can be easily disposed.

If there is any uncertainty involving your ability to clean up a mercury spill, contact your local health

authority for advice. If the mercury spill has been spread around, tracked throughout the house or involves difficult-to-clean items, you may want to contact a contractor skilled in mercury cleanup. Any spill larger than one tablespoon should be reported to the proper authority; professional assistance is required to ensure a thorough cleanup.

When mercury-containing devices are broken, such as fluorescent bulbs, mercury may not be visible. The broken glass should still be treated as a hazard. Procedures, as outlined in **Step 5** under **Cleanup procedures**, should be followed.

### **After a mercury spill**

- DO NOT use a vacuum cleaner to clean up mercury. Vacuuming a mercury spill will increase the mercury vapour in the air and increase the likelihood of human exposure. Any vacuum cleaner used for cleanup will become contaminated and will need to be discarded as hazardous waste.
- DO NOT use a broom to clean up mercury. The broom will break the mercury into smaller droplets and spread them around a larger area, making it hard to find and pick up.
- DO NOT pour mercury down a drain. This could contaminate the plumbing system and the sewage disposal system.
- DO NOT walk around the house in shoes or clothes that may have become contaminated with mercury.

### **Immediately following a small mercury spill**

1. Check to see if mercury was splashed on any person or their clothing. If so, carefully remove all contaminated clothing, including shoes, and place in a sealed bag before leaving the spill area. Mercury on the skin should be carefully wiped off with a damp paper towel.
2. Keep all children and pets away from the spill.
3. If any mercury was ingested, contact your regional poison control centre.
4. Close doors leading to other indoor areas.
5. Ventilate the spill area to the outdoors, if possible.
6. Turn off any ventilation that could circulate air from the spill site to other areas of the structure. This may involve turning down heaters or air conditioners and turning off fans.
7. Turn down the thermostat in order to minimize mercury vaporisation.
8. Stop the spread of mercury by blocking the spill-off with rags. Prevent mercury droplets from entering cracks or rolling under cabinets and appliances.

### Preparing for cleanup of mercury spill

1. Assemble the following cleanup supplies:
  - rubber gloves
  - Ziploc bags
  - rubber squeegee or two pieces of paper or cardboard
  - plastic dust pan
  - wide-mouth plastic container with a lid
  - garbage bags
  - damp paper towel
  - duct tape, masking tape, or packing tape
  - large tray or box
  - flashlight
  - tweezers
  - eye dropper
2. Change into old clothing and shoes that can be discarded if they become contaminated.
3. Remove all jewellery; mercury may bond with the metal.
4. Put on gloves.

## Cleanup procedures for a mercury spill

### *Hard surfaces*

1. Using stiff paper, cardboard, or a rubber squeegee, push the mercury beads together from the outside of the spill towards the middle of the spill. Gently push the beads onto a plastic dust pan or draw them into an eye dropper.
2. Very carefully pour the mercury droplets into a wide-mouth container and secure the lid.
3. Use a flashlight to check for any remaining mercury droplets that may have been missed.
4. Use the sticky side of tape to pick up any droplets that could not be picked up with the cardboard. Place the tape on a paper towel, fold, and place in a plastic bag that can be sealed.
5. If the mercury spill involves broken glass, carefully pick up the glass pieces using tweezers. Place the glass pieces on the paper towel, fold, and place in a sealed plastic bag. Small pieces of glass can be picked up using sticky tape, such as duct tape.
6. Pour or transfer mercury over a large tray or box lined with plastic wrap to prevent spillage. Mercury's high density and smoothness cause it to roll quickly.
7. Dispose of all items that may have been contaminated with mercury. Supplies used for cleanup, as well as any contaminated clothing, shoes, and gloves, should be placed in garbage bags and sealed with tape. Contaminated items should be cleaned or disposed of in accordance with the regulations in your province or territory (see following section). Contact the local office of the Ministry/Department of Environment for further information on disposal.
8. Using soap, thoroughly wash your hands, as well as any other body parts that may have come into contact with the mercury.

### **Other surfaces and items**

- **Porous items** (e.g., clothing, carpets, upholstery)

Cost effectiveness of cleaning vs disposal must be evaluated. It may be necessary to hire a contractor skilled in mercury cleanup, if one does not wish to dispose of the carpet or upholstery. In certain situations, it may be desirable to cut out the contaminated section of carpet and replace it, disposing the contaminated section in accordance with any applicable regulations.

It may be very difficult to rid all mercury from carpeting, as it may collect in the carpet backing, making it inaccessible for cleanup. If you choose to attempt to clean carpeting following a mercury spill, it is strongly suggested that following cleanup, you have the carpet tested for levels of mercury vapours, by contractors skilled in mercury cleanup.

- **Plumbing** (e.g., spills in sink drains)

Working over a tray or bucket, remove the sink trap. It is preferable to place the contaminated trap in a sealed plastic bag. If the old trap is not discarded, the contents of the trap should be poured into a wide-mouth, sealable jar and disposed of. The trap should then be thoroughly washed. Disposal of the trap or its contents should be done in accordance with any local or provincial/territorial regulation.

## Testing post cleanup

If any uncertainty remains as to the effectiveness of the mercury cleanup, it is possible to test for mercury residue in the air using a portable mercury vapour analyser.

Although a level  $0.2 \mu\text{g}/\text{m}^3$  is considered not to increase the risk of adverse health effects (i.e. Minimum Risk Level<sup>†</sup>), the Agency for Toxic Substances and Disease Registry (ATSDR) recommends achieving  $\leq 1.0 \mu\text{g}/\text{m}^3$  for residential occupancy after a spill (i.e. Residential Occupancy Level).<sup>3‡</sup> This should be used as an average concentration in the breathing zone of building occupants, which is well below the allowable occupational limit. Local occupational health and safety authorities can be consulted for any enforceable work place limits. The American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) over an eight-hour period is  $25 \mu\text{g}/\text{m}^3$ .

If you have any questions regarding the cleanup of small mercury spills, contact your local health authority.

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<sup>†</sup> ATSDR definition

<http://www.atsdr.cdc.gov/glossary.html#G-M->

<sup>‡</sup> The guidance considers balancing between health benefit and the exceptionally difficult and disruptive removal actions required to meet the Minimum Risk Level. The decision to use a more protective level should consider if exposed occupants are particularly sensitive to the effects of mercury (e.g., neonates).<sup>3</sup>

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