

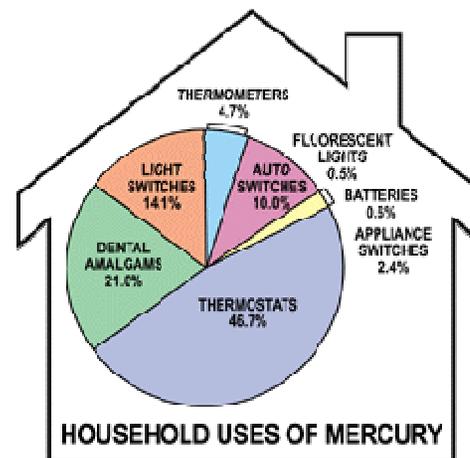
## How does mercury impact the environment?

Mercury moves through the environment in vapor form and in particle form. It is most commonly found in bodies of water because of increases in the levels of mercury in the air and because of runoff. Once in water, mercury often mixes with bacteria to create a highly toxic form — methylmercury. Mercury collects in the tissue of fish and can therefore be ingested by humans. Mercury is toxic both to humans and wildlife. As a result, many states, including Ohio, have issued fish consumption advisories. For more information on fish consumption advisories in Ohio, see <http://www.epa.state.oh.us/dsw/fishadvisory/index.htm>.

## What are some household sources of mercury?

While the majority of mercury in the environment comes from combustors and incinerators, people can be exposed to mercury through a variety of household sources, such as:

- thermometers
- thermostats
- fluorescent lights
- button batteries
- alkaline & carbon batteries before 1991
- latex paints prior to 1991
- some light switches
- pilot light sensors
- some shoes that 'light up'
- some contact lens solutions
- some nasal sprays
- neon lamps
- high intensity discharge (HID) lamps
- amalgam used in some dental fillings
- some pesticides before 1994



## What are the health impacts of mercury?

Mercury exposure can lead to a variety of health problems depending on the length of exposure and the amount of mercury you are exposed to. Mercury can cause a variety of problems with the nervous system, brain, liver, lungs and kidneys. Mercury also causes a variety of problems for developing fetuses. Symptoms of short-term exposure to high levels of mercury include: shortness of breath, muscle aches, fever and sore gums. Symptoms of long-term exposure to high levels of mercury include: trembling hands, numbness or tingling in the lips, hands and feet. Prolonged exposure may result in difficulty walking, vision and hearing impairments, and in some cases coma and death.

## What can I do?

- Do not buy products that contain mercury — many mercury-free alternatives exist
- Do not discard any mercury containing items in the trash; instead, contact your local government agency to properly dispose of mercury.

## *What should I do if there is a mercury spill?*

In the event of a mercury spill, ventilate the area and make sure children and pets are away from the spill. **DO NOT** vacuum or sweep up the mercury because that will only increase the area of your home contaminated with mercury. **DO NOT** pour mercury down the drain.

- First gather two stiff pieces of paper or cardboard, an eyedropper, gloves, plastic bag, duct tape or packing tape, flashlight and a wide mouth container. Use gloves and do not, under any circumstances, touch the mercury.
- Use the flashlight to locate the mercury (the mercury beads will reflect the light, making them easier to find.)
- Push the beads of mercury together with the cardboard and use the eyedropper to suction up the beads of mercury.
- Use the tape to gather up any remaining beads of mercury.
- Once all the beads of mercury have been collected, seal them in the container and call your local government for proper disposal of mercury.

## *For more information on mercury...*

Contact the City of Ravenna Utilities Department at 330.297.2168, or visit the Ohio Environmental Protection Agency at [http://www.epa.state.oh.us/ocapp/p2/mercury\\_pbt/mercury.html](http://www.epa.state.oh.us/ocapp/p2/mercury_pbt/mercury.html).

# MERCURY: YOU, YOUR HEALTH & YOUR HOME

## *What is mercury?*

Mercury, also known as quicksilver, is a heavy, silver, metallic liquid at room temperature. While it is a naturally occurring element, human activity is causing an increase in the amount of mercury that is released into the environment.

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# Mercury in the Household

## Preventing Exposure through Alternative Product Use

Mercury is a chemical element used in many household products such as thermostats, thermometers, batteries, fluorescent lamps, paint, disinfectants, antiseptics and preservatives. Although mercury has many forms, it is typically found in households as a silver-colored liquid metal. Proper care is important when dealing with mercury-containing products because it is toxic and can negatively impact people and wildlife when released to the environment.

If broken, mishandled or disposed of improperly, mercury-containing items can release toxic mercury into the environment. When mercury is spilled in the home it can be absorbed into household materials while also slowly releasing invisible, odorless and tasteless vapors into the air.

In 2007, the State of Ohio passed House Bill 443 ([www.epa.state.oh.us/ocapp/p2/mercury\\_pbt/fact115.pdf](http://www.epa.state.oh.us/ocapp/p2/mercury_pbt/fact115.pdf)), which included bans on mercury-use. The sale of mercury-containing thermometers, thermostats and novelty items are banned in Ohio. Ohio schools through the 12th grade also may no longer purchase mercury, mercury compounds or mercury-containing measuring devices for classroom use.

## Health Effects

Mercury is a neurotoxin that can be absorbed through the skin, inhaled or ingested. Although mercury metal is a liquid at room temperature it readily turns into vapor in the air. Adverse health effects from low doses of mercury include muscle tremors, irritability and immune system dysfunction. High exposure may cause vision, speech and hearing impairment; respiratory problems; and possibly even death.

Children and fetuses are at the greatest risk because their nervous systems are still developing. Damage before birth or in infancy causes late development of walking, talking and possible lifelong learning problems. Kidneys can sometimes remove mercury without adverse health affects.

By learning which products and items contain mercury and handling them properly, we can all help limit the risk of mercury exposure. To reduce your risk, consider replacing some of these commonly used items with a simple and environmentally friendly alternative.

## Antiseptics

Although not commonly used, Mercurochrome® is a skin antiseptic used to treat cuts and abrasions. Mercury-free alternatives include Neosporin® and mycin. Thimerosal, a mercury-containing organic compound, is used in antiseptic creams and as a preservative in pharmaceutical solutions such as contact lens solutions and some vaccines. Talk to your pharmacist or physician about alternatives.



## Barometers

Barometers are used to measure pressure changes in the atmosphere. A good alternative to

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# Mercury in the Household

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barometers that contain liquid mercury is the bourdon tube gauge.

## Batteries

Before 1980, most batteries used in homes contained mercury. Now, only “button” batteries such as those used in hearing aids, watches and other items requiring a small battery, contain mercury. Silver oxide, zinc-air and alkaline batteries are the best alternatives for replacing batteries produced before 1994. In the past decade, the United States battery industry has reduced their use of mercury by 99 percent. They are now proposing the removal of mercury from button cell batteries by 2011.



## Blood Pressure Gauges

Home blood pressure gauges contain up to 70 grams (about 2.5 ounces) of mercury. An aneroid blood-pressure unit is a mercury-free option.



## Household Lamps

Fluorescent, high intensity discharge (HID) and neon lamps contain mercury. Mercury is released if these bulbs are broken or incinerated. Fluorescent lamps save energy, using up to 50 percent less electricity than incandescent lights. In turn, this energy savings reduces mercury emissions from power plants. Low-mercury lamps are available and



often can be recognized by their green caps or labels.

## Household Switches

Mercury conducts electricity well and is used in many temperature-sensitive and mechanical (tilt) household and appliance switches. Many of these switches are inside older appliances such as clothing irons, top-loading freezers and washing machines. Mechanical and electronic switches are available in mercury-free versions.



## Microwave Ovens

Mercury vapor bulbs were used in older microwave ovens but new models do not contain mercury.

## Paints

Prior to 1992, latex paint contained mercury to prevent fungus growth. Latex paint manufactured after 1992 does not contain mercury.



## Pesticides

Fungicides and biocides produced before 1994 used mercury toxins to kill fungus, weeds and other pests. Most pesticides produced now do not contain mercury.



## Thermometers

Mercury is used in thermometers because it expands and contracts evenly with temperature changes. Many states have banned the sale

of mercury-containing thermometers and many stores are voluntarily removing them from their shelves. Alternatives include the electronic (digital), red spirit-filled, glass gallium-indium-tin (galinstan) and flexible forehead thermometers.

## Thermostats

Many homes have thermostats with mercury tilt switches. Some states have banned the sale of mercury-containing thermostats. Alternatives include the electronic (digital), bi-metal snap switch, reed switch and vapor-filled diaphragm thermostats. An added benefit of using digital programmable thermostats is that they can greatly improve a home's energy efficiency.

## Toys, Novelty Items and Clothing

Mercury has been found in children's chemistry sets, maze games, golf balls, fishing lures, grandfather clock pendulums and novelty items such as jewelry or clothing decorations. Some states have banned the sale of novelty items that contain mercury. Check chemistry sets, toys and other items to be sure they do not contain mercury. In the past, mercury was used to create flashing lights in shoe soles. Those manufactured today do not use mercury.



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# Mercury in the Household

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## Other Homeowner Issues

### Dental Amalgam

Dental amalgam, a mixture of mercury, silver and tin, is used in fillings



because it is inexpensive and durable. Amalgam washed down the drain during the dental office visits can accumulate in plumbing and may slowly be released into the wastewater system. Talk to your dentist about alternative fillings made of gold, porcelain, ceramic or plastics.

### Energy Production

Coal-burning utilities are the greatest source of mercury emissions in Ohio and the United States. By using energy-efficient products and practices we can reduce the amount of mercury released. When possible, choose electric service providers based on the cleanest production process available or use alternative energy choices that release less or no mercury.

### Disposal and Recycling of Household Mercury

Although you can legally throw household products that contain mercury into the trash, it is better to recycle them or send them to a licensed household hazardous waste facility. Mercury and products that contain metallic mercury, including thermostats, batteries,

## Pathways to the Environment

Mercury occurs naturally in the earth's surface and is released by forest fires, volcanoes and human activities. Mercury does not break down and is not destroyed when burned. It cycles between soils, the atmosphere and surface water.

People release mercury into the environment in several ways, including:

- product use and disposal;
- processing ores;
- manufacturing products;
- incinerating medical waste;
- municipal waste combustion; and
- burning fossil fuel for energy.

Once mercury is released into the atmosphere, it can travel long distances, settle on soil and wash into lakes and rivers and deposit in sediments.

In lakes and rivers, bacteria convert elemental mercury to methylmercury. Fish ingest the methylmercury as they swim or feed and it begins to accumulate in their tissue. As larger fish, animals and humans ingest the fish tissue, the methylmercury travels up the food chain, becoming more concentrated and toxic.

Many lakes and streams in Ohio and neighboring states have fish consumption advisories due to high levels of mercury. In Ohio, there is a statewide mercury advisory for women of childbearing age and children aged 15 and under. These groups are advised to eat no more than one fish meal per week from any Ohio water body. For water bodies where mercury is a noted contaminant, there are more stringent advisories. The Ohio Sport Fish Consumption Advisory, which can be found online at [www.epa.state.oh.us/dsw/fishadvisory/limitmeals.html](http://www.epa.state.oh.us/dsw/fishadvisory/limitmeals.html), contains more information.

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# Mercury in the Household

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thermometers and fluorescent lights, can be safely recycled. Homeowners can search the Earth911 Web site to find local recyclers in their area by ZIP code at <http://earth911.org/>.

The Bowling Green State University Elemental Mercury Collection and Reclamation program ([www.bgsu.edu/offices/envhs/page18364.html](http://www.bgsu.edu/offices/envhs/page18364.html)) works with Ohio EPA to arrange for free mercury pickups. Many local health departments, fire departments, wastewater treatment plants and solid waste management districts also have special mercury collection programs.

Many communities host thermometer exchanges, trading digital for mercury thermometers. Some home improvement contractors and stores have programs to collect and recycle mercury thermostats and other items.

Some recycling facilities accept mercury and mercury-containing products. For a list, go to [www.epa.state.oh.us/ocapp/p2/recyc/mercrec.html](http://www.epa.state.oh.us/ocapp/p2/recyc/mercrec.html).

Older latex paints and some pesticides may contain substantial amounts of mercury but are not commonly recycled. You can often dispose of these items through community household hazardous waste collection programs. A list of household hazardous waste collection days is available at [www.epa.state.oh.us/dsiwm/pages/recycpro.html](http://www.epa.state.oh.us/dsiwm/pages/recycpro.html).

For more information about mercury and mercury reduction opportunities, visit Ohio EPA's Web site at [www.epa.state.oh.us/ocapp/p2/mercury\\_pbt/mercury.html](http://www.epa.state.oh.us/ocapp/p2/mercury_pbt/mercury.html).

## Responding to a Spill

Mercury spills require careful cleanup to avoid health risks. The safest and best way to clean up a mercury spill is by hiring a licensed professional contractor. If you plan to clean up the mercury yourself, it is important to keep the spilled mercury away from drains, cracks or crevices. **NEVER use a vacuum cleaner** because it will circulate mercury vapors into the air and contaminate the vacuum cleaner.

Keep people and pets away from the area to prevent them from tracking the mercury or inhaling its toxic vapors. Turn off heating and air conditioning systems to avoid circulating contaminated air to other rooms. Ventilate the spill area to the outdoors by opening doors and windows.

Use a powerful flashlight to locate all small mercury beads and gently move them into larger piles using index cards or small paint brushes. The beads can then be picked up with a medicine dropper or by lightly touching the pile with rolled up electricians or duct tape.

Place the collected mercury, medicine dropper, paint brushes, used tape and any other potentially contaminated items used during the cleanup into an airtight jar or zip-top bag. Place the jar or bag into a second zip-top bag.

Mercury that spills into sink drains will remain in the trap and continue to release vapors through the drain. The trap should carefully be removed and placed into a sealed plastic bag for disposal.

Clothing and shoes worn during the cleanup should be placed into a sealed plastic bag for professional evaluation or disposal. Mercury and its vapors are very difficult to remove from clothes, carpet, shoes, vacuums and porous furniture. These items also should be evaluated by a professional to determine if they need to be decontaminated or disposed.

Contact Ohio EPA's 24-hour spill hotline at **1-800-282-9378** for more detailed information on cleaning up a mercury spill. Contact your local health department or physician for medical attention or health information related to mercury exposure.

## IDENTIFICATION OF MERCURY DEVICES IN HOUSEHOLDS

Please use this table to help identify and locate mercury-containing products in homes. This inventory can help the homeowner properly dispose of mercury-containing items and can help identify alternative products when it is time to dispose of the mercury-containing product. Information for this table was adapted from the NEWMOA's Mercury in Schools Project, 2002.

Item	Do You Have the Item?		Location of Items	Non-Mercury Alternatives
	Yes	No		
Bulk elemental mercury				Contact the Ohio EPA or Bowling Green State University to arrange for someone to pick up the mercury from your home. For more information contact: Dave Heinlen, BGSU, (419) 372-2173. <a href="http://www.bgsu.edu/offices/envhs/environmental_health/mercury/contacts.htm">www.bgsu.edu/offices/envhs/environmental_health/mercury/contacts.htm</a>
Fluorescent lamps			Do you currently recycle them? Yes                      No	Low-mercury fluorescent lamps are available (identified by green ends), but should still be recycled.
Mercury vapor lamps, metal halide lamps, high-pressure sodium vapor lamps				Sylvania makes a non-mercury, high-pressure sodium lamp called Lumalux. (Mercury vapor lamps are the oldest and least efficient high-intensity discharge lamp.)
“Silent light” switches				Light switches no longer contain mercury. Manufactured prior to 1991, mercury light switches look like typical wall switches, but they do not make the audible "click" sound when activated.
Mercury thermostats				Non-mercury sealed switches, and programmable and non-programmable electronic . Some HVAC wholesalers collect mercury thermostats for recycling. For more info contact: Ric Erdheim, Thermostat Recycling Corporation, (703) 841-3249 <a href="http://www.nema.org/index_nema.cfm/664/">www.nema.org/index_nema.cfm/664/</a>
Mercury barometer				Aneroid and digital; new liquid barometer being developed.
Mercury cooking thermometer (with the silver liquid)				Spirit-filled glass bulb and digital.

Item	Do You Have the Item?		Location of Items	Non-Mercury Alternatives
	Yes	No		
Mercury fever thermometer				Digital, alcohol, glass bulb non-mercury (gallium, indium, tin) and tympanic
Sphygmomanometer (blood pressure device) - with silver liquid, hand-held unit, mobile unit, or wall unit				Aneroid and digital
Mercury thermometer for freezers, refrigerators				Spirit filled thermometers
Mercury float control switches (e.g., on sump pumps)				Non-mercury alternatives are available. For more information, see: <a href="http://abe.www.ecn.purdue.edu/~mercury/src/devicepage.htm#mcs">http://abe.www.ecn.purdue.edu/~mercury/src/devicepage.htm#mcs</a> .
Mercury oxide or mercury zinc batteries (old alkaline type, prior to 1996) and button batteries				No alternatives available for button batteries. Newer alkaline batteries don't contain mercury.
True vermilion paint (contains mercuric sulfide) for art projects				Request mercury-free vermilion paints, but be aware that these paints may contain other hazards, such as cadmium.
Latex paint (produced before 1992)				Latex paint no longer contains mercury as a fungicide. You may be able to dispose of old latex paint during a community household hazardous waste program (usually a part of your town's recycling program, public works, or board of health.) Contact your town or Ohio EPA at (614) 644-2621 for more information. <a href="http://www.epa.state.oh.us/dsiwm/pages/recycpro.html">www.epa.state.oh.us/dsiwm/pages/recycpro.html</a>
Old fungicides and pesticides (prior to 1991)				You may be able to dispose of fungicides and pesticides through your town's household hazardous waste program.

# Don't trash fluorescent lamps! *Recycle them.*



Fluorescent and High Intensity Discharge (HID) lamps contain mercury. Improper disposal releases mercury into our air, water and soil, harming human health and wildlife. For more information on state regulations and required management options visit <http://www.newmoa.org/lamprecycle>

**Recycle Your Lamps.**

**Proper lamp management minimizes your liability.**

*Sponsored by the Northeast Waste Management Officials' Association (NEWMOA). This is an EPA Funded Project.*

**(Hg)** reminds us that fluorescents contain mercury and must be managed properly.