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Office of Compliance Assistance and Pollution Prevention

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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.

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.

In 2007, the State of Ohio passed House Bill 443 (**www.epa.ohio.gov/portals/41/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.

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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barometers that contain liquid mercury is the bourdon tube gauge.

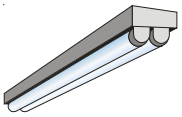
Batteries

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

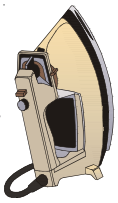
Home blood pressure gauges contain up to 70 grams (about 2.5 ounces) of mercury. An aneroid blood-pressure unit is a mercury-free option.

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.

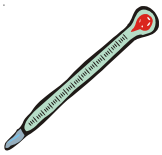
Paints

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.

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.

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, thermometers and fluorescent lights, can be safely recycled.

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 at **www.epa.ohio.gov/dsw/fishadvisory/index.aspx**, contains more information.

Homeowners can search the Earth911 Web site to find local recyclers in their area by ZIP code at **www.earth911.org/**.

Contact your solid waste management district for options on managing your household mercury and mercury-containing products.

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.ohio.gov/ocapp/Recycle.aspx** and choose the *Mercury Recyclers* category.

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.ohio.gov/portals/34/document/general/recycle_hhw_events.pdf**.

For more information about mercury and mercury reduction opportunities, visit Ohio EPA's website at **www.epa.ohio.gov/ocapp/p2/mercury_pbt/mercury.aspx**.

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 **(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.