



Minnesota
Pollution
Control
Agency

Keeping your family safe from mercury

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We all should be concerned about mercury. Although this shiny, silvery metal used to be used widely in manufacturing, agriculture and other industries, it is now considered a dangerous pollutant.

Where is mercury found in the environment?

Mercury occurs naturally in the Earth’s crust, atmosphere and water. There are trace amounts of mercury in virtually every living thing as well as in coal and petroleum, which are the fossil remains

living things. Yet, mercury is not an essential nutrient for any form of life.

What dangers to health does mercury pose?

Mercury is dangerous because it’s a neurotoxin, a poisonous substance that at high enough concentrations damages or destroys nerve tissue. It affects all animals — humans and wildlife alike. Although all forms of mercury are toxic when taken into the body, they are not equally likely to be absorbed. For example, while liquid metallic mercury

Dealing with a mercury spill at home

The best way to protect your family from mercury is to remove mercury-containing products and devices from your home and take them to a household hazardous waste collection site for recycling. But until you do that, be sure to manage mercury-containing products and devices safely.

Should someone break a mercury-containing device or spill mercury some other way, do not vacuum the mercury or do anything to heat it. Instead, call the Minnesota Duty Officer at (800) 422-0798 or follow the directions in the *Cleaning up mercury spills in the home* fact sheet (see www.moea.state.mn.us/hhw/factsheets.cfm).

If you try to vacuum up spilled mercury, you will contaminate your vacuum cleaner and have to dispose of it as hazardous waste. But more importantly (depending on the type of vacuum you have), you will also either increase the amount of mercury in the air or distribute the beads of mercury more widely.

If you increase the amount of mercury in the air, you will create a more dangerous situation and increase the likelihood that someone could be poisoned or killed.

If you scatter the beads of mercury more widely by vacuuming, you will make the spill much more difficult to clean up.

does not penetrate the skin rapidly, the lungs readily absorb mercury vapor. If, on the other hand, metallic mercury is swallowed, the digestive system rejects it.

The greatest health danger from elemental mercury is breathing mercury vapor. Mercury is unique in that, at room temperature, it is liquid and vaporizes like water. Mercury vapor is invisible and odorless to humans. These properties make mercury spills, such as breaking a mercury thermometer in a warm or poorly ventilated space, potentially dangerous. Inhaling a large amount of mercury vapor can result in damage to the central nervous system, kidneys and liver — even death.

Of the mercury compounds that can potentially harm human health, methylmercury, a potent neurotoxin, is of greatest concern. We ingest this organic compound when we eat fish.

How do fish become contaminated with mercury?

Sediment-dwelling bacteria in water bodies produce methylmercury using mercury deposited from the air. Zooplankton take up the methylmercury as they filter the water, and when small fish eat these microscopic animals, the methylmercury is incorporated in the flesh of the fish.

Methylmercury poses the greatest threat to individuals whose nervous systems are still developing or who rely on fish for much of their diet. Methylmercury hampers the development of the nervous systems of fetuses and children under age 15, and in severe cases causes irreversible brain damage. It's estimated that, in the United States, hundreds of thousands of newborns each year are at increased risk of learning disabilities because of prenatal exposure to methylmercury.

Fish provides nutrients essential to fetal, nervous system development.

Should we stop eating fish because it contains methylmercury? No, but we need to be mindful of the risks posed by contaminants in fish. Fish remains an excellent source of protein, vitamins and minerals, and it is low in saturated fat. The oils in fish are important for brain and eye development, and the omega-3 fatty acids may help prevent heart disease.



Mercury in homes is not always easily seen. Here, the cover has been removed from a wall-mounted tilt-switch thermostat to reveal the ampule of mercury behind the cluster of wires.

How much fish can one safely eat? That depends. The levels of methylmercury in fish depend on what the fish eat, how long they live, and how high they are in the food chain. Large, predatory fish, such as walleye, northern pike, shark and swordfish, have the highest concentrations.

Women who are pregnant and nursing mothers need to take extra precautions. And when they plan meals, parents need to remember that their children's nervous systems are still developing and are vulnerable to methylmercury damage. A good way to keep exposure to a safe level is to follow the Minnesota Department of Health's fish consumption guidelines (see www.health.state.mn.us/divs/eh/fish/index.html).

What about mercury pollution?

Because of its unique physical properties, mercury can cycle between land, air and water.

Almost all the mercury that contaminates Minnesota's water bodies and fish comes from the air. Because mercury vapor can be transported long distances in the atmosphere, most of Minnesota's mercury emissions are deposited in other states and countries, and most

of the mercury that's deposited in Minnesota originates elsewhere. An explanation of sources of mercury pollution in Minnesota is at www.pca.state.mn.us/publications/p-p2s4-06.pdf. Thirty percent of the mercury that is deposited from the atmosphere in Minnesota comes from natural processes, such as forest fires and volcanic activity around the world. The rest is from human activities, including burning fossil fuels to generate electricity, heat homes and power vehicles; metal production; the disposal of mercury-contaminated trash; and the purposeful use of mercury (such as in fluorescent bulbs, button batteries, and dental amalgams).

Protect your family and the environment from mercury.

Properly dispose of mercury-containing products and devices.

Take mercury-containing products and devices that you find in your home to a household hazardous waste collection site so the mercury can be recycled. To find out where the site for your county is, go to www.pca.state.mn.us/publications/p-p2s4-06.pdf or call (800) 657-3843 or (651) 296-3417.

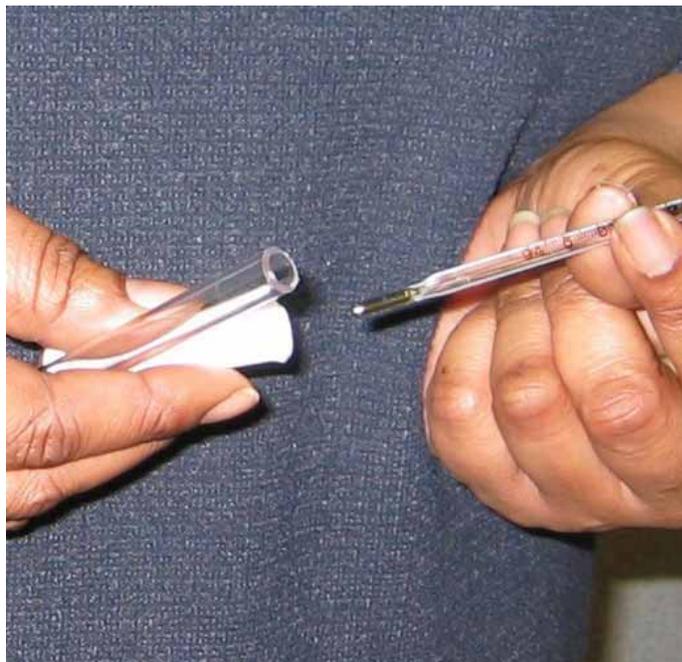
Recycle mercury-containing fever and kitchen thermometers, thermostats, barometers, blood pressure cuffs, spent fluorescent tubes and bulbs, and old toy chemistry sets.

Make sure old household appliances, such as washers, which may contain mercury tilt switches and gauges, are recycled properly.

Buy mercury free.

Avoid products that contain mercury. Minnesota law requires that all such products be labeled, but not all manufacturers are aware of this requirement. Mercury-free substitutes exist for just about everything. Look for these alternatives:

- alcohol (red bulb) and digital thermometers;
- electronic thermostats;
- digital barometers, blood pressure cuffs, or other gauges; and
- mercury-free fishing gear (such as tip-ups).



Breakage of mercury fever thermometers is the most common cause of mercury spills in homes. Replace all mercury thermometers and other mercury-bearing devices in your home with non-mercury alternatives.

Should a family member need a dental cavity filled, ask your dentist about using a mercury-free composite instead of mercury amalgam. Although more and more dentists have mercury separators, mercury emissions from dental clinics still account for a lot of the mercury that goes to municipal wastewater- (sewage-) treatment plants.

Exercise caution when buying old appliances, tools, toy chemistry sets, and boxes of miscellaneous items at garage sales, auctions and flea markets. They or their components could contain mercury.

Conserve energy.

Using less energy at home will not only save you money, it will also help reduce mercury pollution. That's because coal contains trace amounts of mercury and when electrical power plants burn coal, mercury is released to the atmosphere. Conserving energy reduces the amount of coal that power plants must burn to meet demand.

The Minnesota Department of Commerce has information on home energy conservation. For information about the following and other

energy-conserving measures, go to www.commerce.state.mn.us and search for “Home Energy Guides” or call (800) 657-3710.

- Caulk and weatherstrip your home.
- Turn down the furnace and water heater.
- Set the air conditioner to kick in at a warmer temperature.
- Use a digital thermostat to program your furnace to run cooler at night or when no one’s at home.
- Replace incandescent bulbs with fluorescents, which use at least 50 percent less energy per unit of light emitted. But remember, fluorescent bulbs contain mercury and must not be thrown in the trash. For handling and recycling information, see the *Fluorescent light bulbs: Use them, recycle them.* fact sheet at www.pca.state.mn.us/publications/w-hhw4-30.pdf.



Replace incandescent bulbs with fluorescents, which use at least 50 percent less energy per unit of light emitted.

- Buy energy-efficient appliances. Look for the Energy Star label, which gives comparative data on how much energy an appliance uses. For more information, see www.energystar.gov/.

What to do if a fluorescent bulb is broken

If you happen to break one or two fluorescent bulbs, keep people and pets out of the room. Open the windows and exterior doors to vent the mercury vapor to the outdoors for about 15 minutes before you clean up.

Put on rubber gloves and carefully pick up the fragments, glass shards and any powder with sticky tape. Once you’ve picked up the visible pieces, you can vacuum. Place all the pieces and used cleanup materials (include the vacuum bag) in a plastic bag and seal it. Be sure to wash your hands when you’re done cleaning up. Then call your local household hazardous waste facility for disposal instructions.

If you break more than two fluorescent bulbs or if you are unsure of what to do, call the Minnesota Duty Officer at (800) 422-0798.