CITY OF OPELIKA
MERCURY MINIMIZATION PROGRAM

What is Mercury?

Mercury is a naturally-occurring chemical element found in rock in the earth's crust. On the periodic table, Mercury has the symbol "Hg" and an atomic number of 80. It can be found in several different forms.

1

ELEMENTAL (METALLIC) MERCURY

Elemental or metallic mercury is a shiny, silver-white metal that is liquid at room temperature. It is used in older thermometers, fluorescent light bulbs and some electrical switches. When dropped, elemental mercury breaks into smaller droplets which can go through small cracks or become strongly attached to certain materials. At room temperature, exposed elemental mercury can evaporate to become an invisible, odorless toxic vapor. If heated, it is a colorless, odorless gas. Elemental mercury is an element that has not reacted with another substance. When mercury reacts with another substance, it forms a compound.

2

METHYLMERCURY AND OTHER ORGANIC COMPOUNDS

Methylmercury and other organic mercury compounds are formed when mercury combines with carbon. Microscopic organisms convert mercury into methylmercury, which is the most common organic mercury compound found in the environment.

3

INORGANIC MERCURY COMPOUNDS

Inorganic mercury compounds take the form of mercury salts and are generally white powder or crystals, with the exception of mercuric sulfide (cinnabar) which is red. Most uses of inorganic compounds have been discontinued.

Why are We Concerned About Mercury?

Mercury is a hazardous material that causes serious environmental and health problems. Although it is found naturally, problems arise from its release through natural causes, energy production, or improper disposal of man-made products containing mercury. Once mercury is released into the environment, it converts to the toxic form, methlymercury, and is virtually impossible to remove.

Emissions of Mercury into the Air

Mercury becomes a problem for the environment when it it is released from rock and ends up in the atmosphere and in water. These releases can happen naturally. Both volcanoes and forest fires send mercury into the atmosphere.

Human activities are responsible for much of the mercury that is released into the environment. The burning of coal, oil and wood as fuel can cause mercury to become airborne, as can burning wastes that contain household consumer goods made with mercury.

Airborne mercury can fall to the ground in raindrops, in dust, or simply due to gravity (known as "air deposition"). The amount of mercury deposited in a given area depends on how much mercury is released from local, regional, national, and international sources.

Causes of Mercury Air Emissions

- Burning coal and other fossil fuels
- Burning oil that contains mercury
- Burning wood that contains mercury
- Burning mercury-containing wastes including wastes from the manufacture of Portland cement and consumer products that contain mercury (like electronic devices, batteries, light bulbs and thermometers) which are thrown into garbage that is incinerated
- Using certain technologies to produce chlorine
- Breaking products that contain mercury
- Burning iron ore, coke and limestone in electric arc furnaces used to produce steel
- Using coal-fired boilers in many industries to generate forms of thermal heat like steam

Mercury's impact on the Environment

Mercury in the air may settle into water bodies and affect water quality. This airborne mercury can fall to the ground in raindrops, in dust, or simply due to gravity (known as "air deposition"). After the mercury falls, it can end up in streams, lakes, or estuaries, where it can be transferred to methylmercury through microbial activity. Methylmercury accumulates in fish at levels that may harm the fish and the other animals that eat them.

The amount of methylmercury in fish in different waterbodies is a function of a number of factors, including the amount of mercury deposited from the atmosphere, local non-air releases of mercury, naturally occurring mercury in soils, the physical, biological, and chemical properties of different water-bodies and the age, size and types of food the fish eats. Fish absorb mercury from their food and water as it passes over their gills. It binds to protein in the fish tissue, inclusing muscles.

When people consume fish with stores of methlymercury, the mercury can build up in their bodies as well. The risk depends on how much and how often people eat certain types of fish. Too much mercury consumption can lead to heart disease in adults.

Mercury's impact on your Health

Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, and immune system of people of all ages. Research shows that most people's fish consumption does not cause health concerns. However, it has been demonstrated that high levels of methylmercury in the bloodstream of unborn babies and young children may harm the developing nervous system, making the child less able to think and learn.

Control of Mercury in the Environment

The Alabama Department of Public Health issues a yearly analysis of the state's waterways to determine the level of chemicals (including mercury) in fish and if those levels exceed recommended amounts. A link to the ADPH Fish Advisory is given at the end of this article.

The Alabama Department of Environmental Management regulates how mercury containing products are disposed by industrial and commercial users and regulates the quantity of mercury that can be discharged into the waters of Alabama and could accumulate in fish.

Control of Mercury in the Environment (Continued)

The City of Opelika has developed a Mercury Minimization Plan and will evaluate available information to assess the potential for non-domestic users of the sewer system to contribute mercury to the system. In an effort to minimize mercury, the City will survey and evaluate common sources of mercury. A special focus will be given to dental offices that use mercury in amalgam that may be discharged to the POTW.

the city of Opelika is working to inform all the citizens of Opelika about the environmental impact of mercury and the steps that we can all take to reduce mercury in the environment.

WHAT CAN I DO TO HELP?

Proper Disposal of Mercury Containing Devices

A number of local businesses will accept used mercury-containing devices at no charge. Some of these businesses will accept additional devices for a small fee. Please check with the individual store to verify availability, hours of acceptance and any fees that may apply before delivering devices to that location. <Link to Recycling Locations>

Household Products Containing Mercury

- Float switches
- Thermostats
- Blood-pressure cuffs
- Barometers
- Button-cell batteries
- Mercurochrome
- Auto switches
- Chemistry sets
- Dental amalgam
- Old latex paint (pre-1990)
- Some oil-based paints
- Old alkaline batteries (pre-1996)
- Old light-up tennis shoes (pre-1997 LA gear)
- Thermometers (looks like a silvery liquid)
- Old fungicides for seeds and turf
- Fluorescent and high-intensity discharge (HID) lamps
- Some imported jewelry (glass ampules with silver liquid)
- Weight/counterweight in grandfather clocks

CLEANING UP MERCURY SPILLS

What **NOT** to do When Cleaning Up Mercury Spills

Never use a vacuum cleaner to clean up mercury. 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 walk around if your shoes might be contaminated with mercury. Contaminated clothing can also spread mercury around.

Prepping for Clean-Up of Mercury Spills

- 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 for Clean-Up of Mercury Spills

- 4-5 ziplock-type bags
- Flashlight
- Rubber, nitrile or latex gloves
- Paper towels
- Cardboard or squeegee
- Eyedropper
- Powdered sulfur (optional)
- Trash bags (2 to 6 mils thick)
- Duct tape, or shaving cream and small paint brush

Steps for the Clean-Up of a Mercury Spill

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 sticky tape, such as duct tape, to pick up any remaining small glass fragments. 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. It is OPTIONAL to use commercially available powdered sulfur to absorb the beads that are too small to see. The sulfur does two things: it makes the mercury easier to see since there may be a color change from yellow to brown, and it binds the mercury so that it can be easily removed and suppresses the vapor of any missing mercury.

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 clean-up, 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 for at least 24 hours after cleanup. Continue to keep pets and children out of cleanup area. If sickness occurs, seek medical attention immediately.

Helpful Links

1. What to Do if a Compact Fluorescent Light Bulb (CFL) Breaks
<https://www.epa.gov/cfl/cleaning-broken-cfl#di>

2. What to Do if a thermometer Breaks
< https://www.epa.gov/mercury/what-do-if-mercury-thermometer-breaks>

3. Household Mercury Containing Devices
<http://www.adem.state.al.us/programs/land/landforms/HouseMercury.pdf>

4. Household CRTs – Mgt and Disposal
<http://www.adem.state.al.us/programs/land/landforms/CRTHouse.pdf>

5. Fluorescent Lamps
<http://www.adem.state.al.us/programs/land/landforms/FLamp.pdf>

For More Information

1. Alabama Department of Public Health
<https://www.al.com/news/2017/07/fish_advisories_what_alabama_f.html>

2. Alabama Department of Environmental Management
<http://www.adem.state.al.us/programs/land/guidanceReports.cnt>

3. United States Environmental Protection Agency
<https://www.epa.gov/mercury>