Mercury Environmental Awareness Fact Sheet
A Fact Sheet for Indiana Residents

General Information

Mercury, a highly toxic chemical element, is found naturally in the environment. The symbol for mercury is Hg; it is one of many metals found on the periodic table, however, it is the only metal that is liquid at room temperature. This property makes it very useful for a variety of industrial and household products.

Just under one third of the mercury that is in the environment occurs naturally, most is released into the environment by human pollution. Mercury is persistent in the environment therefore when pollution occurs the element makes it into the atmosphere as well as lakes, streams and other waterways. Once in the waterways it goes through a metabolic reaction with bacteria creating a compound known as methyl mercury. Methyl mercury is considerably more detrimental to humans and wildlife, contaminating the food supply by building up in the tissues of fish and animals.

Mercury Environmental Contamination

When mercury or raw materials containing mercury are used in manufacturing or as power sources the element can enter the environment in many phases.

Coal fired power plants, industrial boilers, and waste combustion comprises of the majority of the man made mercury pollution sources. While, many products that contain mercury are used daily in our homes, it is when those products including thermometers, switches, fluorescent light bulbs, computer monitors, and batteries are improperly disposed of that the element negatively impacts the environment. The mercury in those products often enters landfills where waste combustion releases it into the atmosphere.

The half gram of mercury contained in a mercury thermometer is enough to contaminate five million gallons of water.

Major Source of Indiana Mercury Contamination

Over 55% of the mercury that is released into the atmosphere in Indiana is due to Indiana’s 23 coal burning power plants. The plant in Rockport, Indiana accounts for an estimated 1200 pounds of emissions emitted into the atmosphere per year. This plant leads all other plants in the Midwest in pounds of emissions emitted.6

Mercury Movement through the Environment

Mercury moves readily throughout the environment. Once it reaches a water source it can either be evaporated back into the atmosphere or it can move on in the food chain.3

Plankton in the waterways become contaminated with mercury and the smaller fish such as minnows that consume the plankton then get eaten by larger fish.7 Humans or other wildlife then eat the larger fish. As mercury moves up the food chain it becomes increasingly more concentrated, so by the time it reaches humans it is at an elevated level3. Currently, voltammetry is the method used to determine the level of metal in the marine system.8

Mercury: Effects on Wildlife

- **Fish**: Mercury contaminated rainbow trout suffer from impaired development and high death rate of young. Yellow perch and northern pike with high mercury concentrations have impaired kidney function and endocrine disruption.

- **Birds**: Contaminated loons produce lighter eggs and less than 50 percent hatch. The chicks that hatch with high mercury concentrations affect brooding and feeding.

- **Frogs**: Increasing incidence of limb deformities among species such as bullfrogs and northern leopard frogs. These frogs spend the majority of their lives in water. It also causes high mortality of tadpoles and embryos.9
Mercury: Effects on Humans

In 1917, Antoine Jussieu was the first to document the effects of mercury on mine workers in the Spanish mercury mines. His accounts stated that the slaves that worked and ate in the mine suffered from mercury poisoning.  

The central nervous system is attacked when humans are poisoned by mercury. Children, women of childbearing years, and women that are nursing or pregnant are most vulnerable to the effects of mercury. Signs of mercury poisoning include, but are not limited to blindness, paralysis, loss of muscular control, loss of motor skills, and birth defects.  

About 300 cases are reported each year of mercury poisoning from children exposed to mercury from broken thermometers in Indiana alone.  

Works Cited

The answers to this cross-word puzzle can be found in the text of the Mercury Environmental Awareness Fact Sheet.

Across:
1. Mercury, a highly ______ chemical.
3. Periodic table element Hg is ________.
5. A fact sheet for ___________ residents.
7. Coal burning power plants are a source of man made mercury ____________.
8. Human food source that eat mercury contaminated plankton.
9. These are found on the periodic table.
11. Nickname of the factory workers that suffered mercury poisoning.
12. Temperature gauge containing mercury.
14. Primary source of Indiana’s mercury pollution.
15. First to document the effects of mercury on mine workers in 1917.

Down:
2. _________________ loons produce lighter eggs and less than 50 percent hatch
4. The central nervous system is attacked when humans are ____________ by mercury.
6. Mercury is persistent in the environment therefore when pollution occurs the element makes it into the atmosphere as well as lakes, __________ and other waterways.
10. Frogs spend the majority of their lives in ______________
11. It is one of many ________ found on the periodic table.
13. Mercury can be ______________ back into the atmosphere or it can move on in the food chain.