What Can You Do?

It is better to prevent pollution rather than to clean it up. This is the central theme of Canada's main environmental law, the Canadian Environmental Protection Act. By being aware of the products you use, you can plan for safe disposal or find alternatives.

Mercury may be in fever, basal and cooking thermometers in your home. Digital or spirit-filled thermometers are a safer alternative. Plan for safe disposal of fluorescent lamps, thermostats and some batteries, along with switches or relays found in some sump pumps, automobile trunks and other automatic tilt switches. Your municipality may have more disposal instructions for these products.

If mercury spills, don't use a vacuum cleaner because it may help vaporize or volatilize the mercury. Push the mercury carefully from the spill area with a sharp edge. An eye dropper can capture the beads. Treat the disposal of spilled mercury as you would any hazardous waste by contacting your municipal authorities.

Learn more about mercury. At the end of this publication, there are ways to find more information.

What Are Governments Doing About Mercury?

Governments, industry and environmental non-government organizations are working together to take action. Between 1990 and 1995, mercury emissions in Canada decreased by more than 60%, from 33 tonnes to 12 tonnes of atmospheric emissions annually. There are plans to continue this action, and build on it. This includes promoting measures that prevent mercury pollution in the first place. Among the actions taken by governments:

International

- Mercury is one of three heavy metals addressed by the United Nations Economic Commission for Europe's Convention on Long-Range Transboundary Air Pollution. Canada has agreed to a 50% reduction of national emissions of mercury.
- Mercury emissions from significant sources in Canada, the United States and Mexico will be reduced under the North American Regional Action Plan on Mercury, currently under development. This Plan will manage mercury from emissions, products and processes, and wastes produced by human activity.
- The Eastern Canadian Premiers and New England Governors are coordinating efforts to reduce mercury emissions through a regional Mercury Action Plan.
- The Great Lakes Binational Toxics Strategy provides a framework for specific actions, including reduction challenges, to reduce or eliminate persistent toxic substances from the Great Lakes Basin. Mercury is one of the critical pollutants addressed in this strategy.

Government of Canada and Provincial/Territorial Partners

- Releases of mercury to air from mercury cell chlor-alkali plants are regulated by the chlor-alkali regulations under CEPA. Releases of mercury in effluents from these plants to surface waters are regulated by the chlor-alkali mercury liquid effluent regulations under the Fisheries Act.
- The Canadian Council of Ministers of the Environment (CCME) is developing Canada-wide standards to reduce or eliminate mercury emissions from the largest industrial and municipal sources, and to prevent and reduce releases from a number of products that contain mercury.
- Canada and Ontario have included mercury in a number of agreements to restore and protect ecosystems and prevent pollution in the Great Lakes. These agreements support the Great Lakes Water Quality Agreement between Canada and the United States.
- Recommendations from multi-stakeholder groups to reduce mercury emissions have been accepted by the federal Environment Minister, and are expected to be implemented in the steel, base metal smelting and electric power generating industries.
- Canadians can monitor significant mercury releases to the environment through the National Pollutants Release Inventory (NPRI) at www.ec.gc.ca/pdb/npri or the ARET database at www.ec.gc.ca/ARET/.
- In the Arctic, the Northern Contaminants Program is monitoring mercury and other contaminants in traditionally harvested foods, as well as informing individuals and communities about the risks.
- Through the recently announced Toxic Substances Research Initiative, the federal government is supporting additional research on the transport and fate of mercury in the environment.

For more information about mercury:

Environment Canada: www.ec.gc.ca
Canadian Council of Ministers of the Environment: www.ccme.ca
Health Canada: www.hc-sc.gc.ca
Department of Fisheries and Oceans: www.dfo-mpo.gc.ca
Natural Resources Canada: www.nrcan.gc.ca
Canadian Centre for Pollution Prevention: http://c2p2.sarnia.com
Pollution Probe: www.pollutionprobe.org
National Wildlife Federation: www.nwf.org/nwf/greatlakes
Conference of New England Governors and Eastern Canadian Premiers: www.cmp.ca/mercury.htm
United States Environmental Protection Agency (EPA): www.epa.gov
Commission for Environmental Cooperation: www.cec.org
United Nations Convention on Long-Range Transboundary Air Pollution: www.unece.org/env/env_eb.htm
Environment Canada's Inquiry Centre: tel. (819) 997-2800; toll-free 1-800-668-6767; fax (819) 953-2225; e-mail enviroinfo@ec.gc.ca
Environment Canada's National Office of Pollution Prevention: tel. (819) 953-9086; fax (819) 953-7970

This brochure is available on the Green Lane, Environment Canada's Internet site, at www.ec.gc.ca

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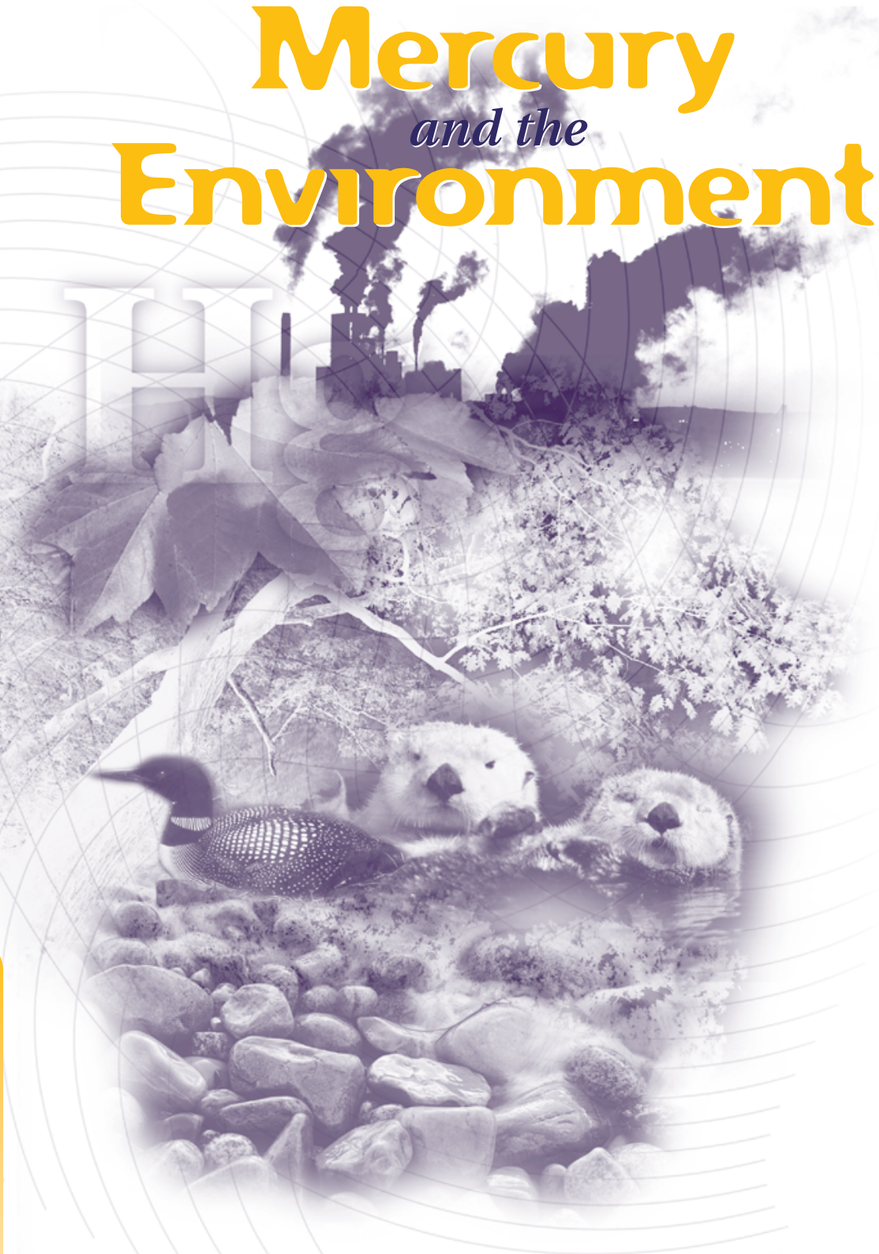
Mercury *and the* Environment



Mercury is the Roman name for the Greek god Hermes, the protector of travelers, thieves and merchants. Ironically today, the release and transport of airborne mercury is one of the environmental challenges we face.

Environment Canada Environnement Canada

Canada

Hg is the chemical formula used to describe mercury, from the name given by the ancient Greeks – Hydrargyrum – meaning liquid silver. Mercury also goes by other names such as Native Mercury and Quicksilver. Mercury is also sometimes referred to as a heavy metal.

A Natural Metal

Mercury is an element that is found naturally in the environment. It has several forms:

- At room temperature, mercury is the only metal that is liquid. It is shiny, silver-white and odourless.
- When heated, mercury becomes more volatile and the liquid metal changes to a colourless, odourless gas.
- When combined with other metals such as tin, copper, gold or silver, mercury alloys are formed.

Mercury alloys are used for such things as dental fillings and mirrors. Mercury is also used in batteries, dyes and pigments, electrical switches and gauges, lamps, thermometers and thermostats.

Mercury is an elemental metal, meaning that it doesn't break down in the environment. Some organic mercury compounds can build up over time in living organisms. These properties are referred to as persistence and bioaccumulation. Mercury is listed as a toxic substance under the Canadian Environmental Protection Act (CEPA).

Where Does Mercury Come From?

As a naturally occurring element, mercury is found throughout the earth's crust, and is also present in varying concentrations in soil, plants, food, water, fossil fuels and other natural materials in the environment.

The Traveller

Mercury releases come from two important sources: natural sources (largely uncontrollable) and human activities (that we can control).

Natural sources: Mercury can be redistributed through the environment by means of natural processes — runoff from the earth's crust into bodies of water, and evaporation into the air from soil and plants. It also escapes from deep in the crust up through geological faults and fissures and from volcanoes. Plants can take up mercury from the soil as they grow and release it when they decay or burn. Scientists estimate these natural sources put out atmospheric emissions of mercury totaling some 2,500 tonnes each year.

Human sources: Human activities, or "anthropogenic sources," are also adding to the current natural sources of mercury in the environment. It is estimated that these human activities, around the world, release an estimated 2,200 tonnes of mercury into the environment each year. Major sources of airborne mercury include coal-fired power plants and incinerators. Other sources of releases include industrial processes, waste disposal and daily uses of mercury (such as dental fillings, dyes, electrical switches and thermometers).

Because mercury vaporizes and then condenses, a theory has been proposed that it will move north with the prevailing winds, until some that was released in the south may find itself deposited eventually in the Arctic. Some of this mercury may then accumulate in foodchains, especially in older fish. The Aboriginal people in the Arctic, who rely heavily on fish and marine mammals in their diet, are known to have elevated concentrations of mercury in their blood and hair, and it has been detected in mothers' breast milk.

The Mad Hatter from "Alice in Wonderland" got his name because early hat makers developed a neurological disease from using mercury in the manufacture of felt hats.

Six Canadian provinces have fish consumption advisories of some kind because of mercury concerns.

Mercury – Its Effect on Health and the Environment

Mercury compounds can be toxic at very low levels in the environment. Scientists cannot tell us what level of mercury in our environment would be considered "safe." Converted by bacterial action in lakes and waterways to the more toxic form known as methyl mercury, it then bioaccumulates in fish and shellfish. The toxic form gets concentrated as it is transferred up the food chain to birds, animals, marine mammals and humans in a process known as biomagnification. High levels of exposure can cause severe health problems immediately, but it is the lifetime accumulation of mercury that is the greater risk to future mothers and their babies. Mercury is a neurotoxin — this means it can cause damage to the brain and central nervous system. It also affects the kidneys and lungs. Methyl mercury is known to affect learning ability and development in children.