What Can I Do?

Use Less Energy

Coal-fired electricity generation represents one of the largest sources of mercury emissions to the Canadian environment. By decreasing the amount of electricity we use, we can reduce mercury emissions from this sector. Hydro-electric dams also increase mercury levels in the water reservoirs that result from their construction. Use energy efficient appliances and check with environmental organizations in your municipality or Natural Resources Canada to find out about improving the energy efficiency in your home.

Reduce your use of mercury-containing products

Although the mercury content has been reduced for some products, consumers often have the choice to avoid purchasing mercury-containing products in favour of mercury-free alternatives. For more information, visit: **www.ec.gc.ca/mercury**

It is important to note that although incandescent bulbs are a mercury-free alternative for lighting, they are far less energy efficient than fluorescent lamps. Using fluorescent lamps, which contain small amounts of mercury, can reduce energy consumption and can decrease overall mercury emissions as long as they are disposed of properly.

Properly dispose of mercury-containing products

When disposing of mercury-containing products, it is important to handle them safely to avoid potentially harmful spills. At the end of a product's useful life, it should be properly disposed of, in accordance with local regulations and policies. Recycling should be considered wherever possible.

Avoid Spills!

Mercury is a hazardous substance and extreme care should be taken to avoid the breakage of mercury-containing items and to prevent mercury spills. Information on small mercury spills is available on Environment Canada's Mercury and the Environment website: **www.ec.gc.ca/mercury**

If you have concerns regarding spilled mercury, contact your provincial / territorial or municipal environmental health authorities for guidance on appropriate actions and requirements for your region. If you are concerned about mercury exposure, consult your physician or contact Health Canada. You may wish to consult a trained professional to evaluate the mercury levels in the spill area.

Educate Yourself

To learn more, please visit: **www.ec.gc.ca/mercury**. Pass it on! Share what you have learned about mercury and what you can do to help with your family, neighbours and coworkers.

For more information about mercury:

Environment Canada's Mercury and the Environment Web Site contains information on:

Environment and Health

Sources of Mercury

Mercury Management

What Can I Do?

Fish Consumption Advisories

Dental Amalgam Waste

Cleaning Up Small Mercury Spills

Mercury Disposal

Mercury Links
www.ec.gc.ca/mercury

Canadian Council of Ministers of the Environment:

Canada-Wide Standards for Mercury
http://www.ccme.ca/initiatives/standards.html?category_id=4

Health Canada:

Fish Advisories
http://www.hc-sc.gc.ca/english/protection/warnings/2001/2001_60e.htm

Mercury and Human Health
http://www.hc-sc.gc.ca/english/iyh/environment/mercury.html

Mercury Questions and Answers
http://www.hc-sc.gc.ca/hecs-sesc/toxics_management/mercury/toc.htm

Natural Resources Canada:

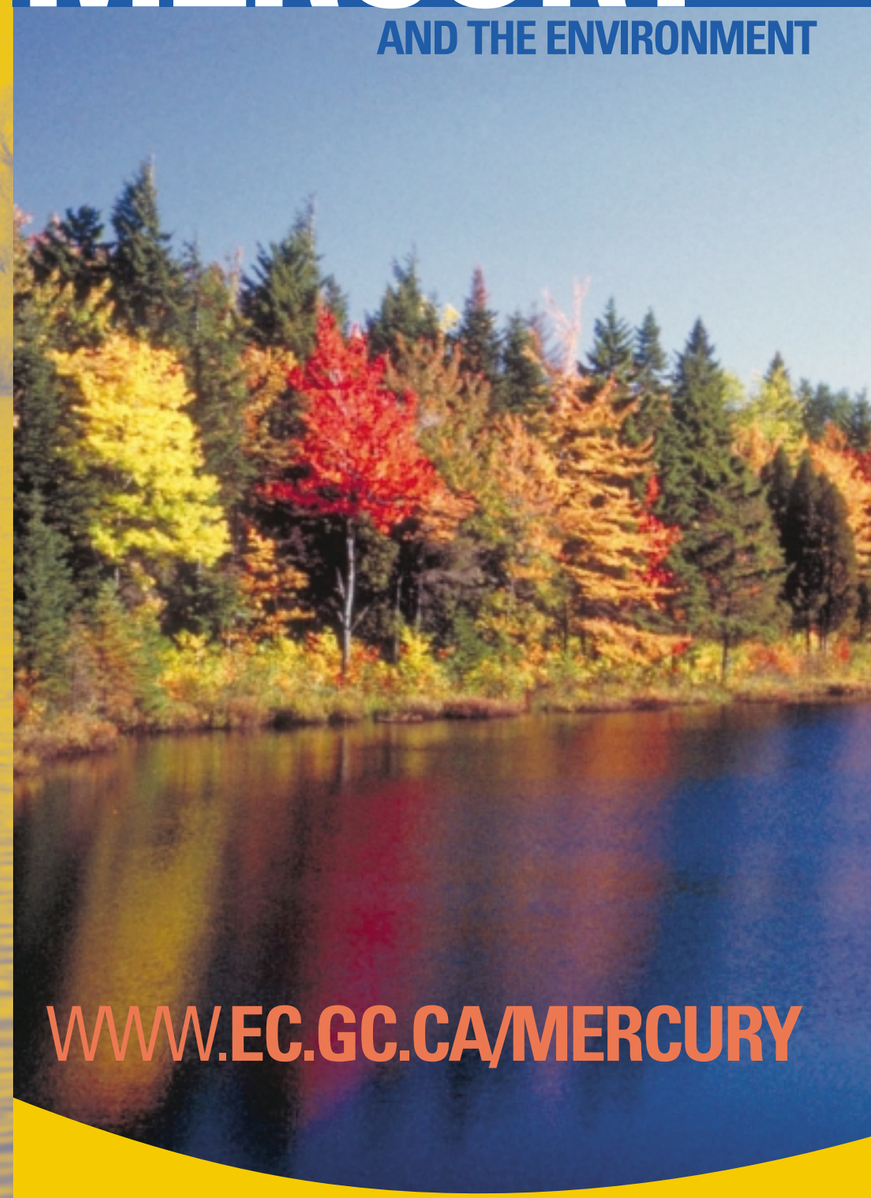
Office of Energy Efficiency
http://oee.nrcan.gc.ca/english/

Canadian Centre for Pollution Prevention:
http://www.c2p2online.com/

Environment Canada Environnement Canada

MERCURY

AND THE ENVIRONMENT

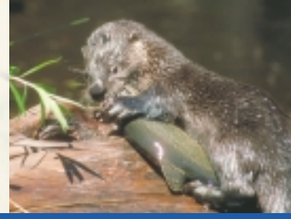


WWW.EC.GC.CA/MERCURY

Canada

What is Mercury?

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, and is listed as a toxic substance under the *Canadian Environmental Protection Act, 1999*.



Mercury is an elemental metal that is found naturally throughout our solar system. It has several forms:

- At room temperature, mercury is the only metal that is liquid. It is shiny, silver-white and odourless.
- Mercury is also volatile – the liquid metal can evaporate to form a colourless, odourless gas at room temperature and especially when heated.
- Mercury amalgamates with other metals such as tin, copper, gold and silver.
- Mercury is toxic, persistent and can build up over time in living organisms. Because it is an element, it does not break down in the environment.

Sources of Mercury

Natural Sources

Rich geological deposits of mercury are most often found in the form of cinnabar, a red mineral or ore composed of mercury sulphide. The mercury content in cinnabar can reach 86%.

Mercury can be mobilized in the environment through various natural processes like volcanic eruptions, the natural weathering of rocks, forest fires, flooding, and evaporation from water bodies and soils.

Human Sources

Human (or "anthropogenic") sources are also adding to natural sources of mercury in the environment. Around half of the mercury currently emitted to the atmosphere is from human activity, including the burning of coal, waste incineration and industrial processes like the smelting of metal. In the year 2000, global anthropogenic emissions of mercury to the atmosphere were approximately 2269 tonnes.

Despite mercury's toxic nature, it has been used in a variety of consumer products because it is a good conductor of electricity, reacts precisely to temperature and pressure changes, and possess several other unique properties. Products that can contain mercury include:

- Batteries
- Barometers
- Dental Amalgam
- Fluorescent Lamps
- Certain Medical Devices
- Manometers
- Switches and Relays
- Thermometers
- Thermostats
- Various temperature and Pressure sensing devices

In most cases, mercury free alternatives are available. It is important to ensure that mercury-containing products are disposed of properly at the end of their useful life to prevent mercury releases to the environment. For more information, visit: **www.ec.gc.ca/mercury**

The Mercury Problem

Environmental Impacts

Mercury emitted from human sources can remain in the atmosphere for a length of time anywhere from hours to years and be carried long distances on wind currents. Mercury can then fall out of the atmosphere, or be washed out by rain and snow, ending up around the globe and in remote areas like the Arctic. Once in lakes and waterways, mercury can be transformed to the more toxic methylmercury, which can build up, or "bioaccumulate" in the bodies of living creatures.

Methylmercury levels can increase up the food chain as creatures accumulate the methylmercury that was in their food in a process known as biomangnification. This is most often seen in fish eaters, like swordfish, bass, walleye, loons, otters, and people. This accumulation of methylmercury can have harmful effects on wildlife, and has led to extensive fishing advisories in Canada.

Health Concerns

Mercury is a neurotoxin — this means it can cause damage to the brain and central nervous system. It can also affect the kidneys and lungs. Methylmercury, one of the most toxic forms of mercury, is known to affect learning ability and proper development in children.

High levels of mercury exposure for humans can cause severe health problems immediately, but it is the accumulation of low quantities of mercury that is the greater risk to future mothers and their babies.

One of main routes of mercury exposure for people is through eating certain species of fish, particularly larger fish that eat other fish, like shark, swordfish and tuna. Exposure can also occur when mercury-containing products, such as fluorescent lamps, thermometers, and thermostats, are broken and mercury is released or spilled.

Fish Advisories

Currently, 98% of fish consumption advisories issued in Canada are due to mercury, and there is particular concern for subsistence fishers who eat large quantities of fish as part of their traditional lifestyles.

Health Canada advises consumers to limit their consumption of certain species of commercial fish, however, the benefits of including fish in a well balanced diet cannot be overlooked. For more information, visit: **http://www.hc-sc.gc.ca/english/protection/warnings/2002/2002_41e.htm**

For sport fish caught in local waters, consumers should be aware of any fish advisory in the area. For more information, visit: **http://www.ec.gc.ca/MERCURY/EN/fc.cfm**

Mercury Management

Canada's commitment to the continuing reduction of anthropogenic mercury emissions is borne out by the fact that domestic emissions were reduced by around 90% between 1970 and 2000. Since 2000, Canada's annual mercury emissions have ranged between 8 and 9 tonnes. Canada also works with other countries to promote global mercury reductions.

Links to each of the following initiatives are available at: **www.ec.gc.ca/mercuy**

The Canadian Environmental Protection Act, 1999

Mercury is listed as a toxic substance under the *Canadian Environmental Protection Act, 1999*, providing the Minister of the Environment the authority to make regulations for this substance. Several regulations under the act apply to mercury, notably the *The Chlor-alkali Mercury Release Regulations, Export and Import of Hazardous Wastes Regulations, Interprovincial Movement of Hazardous Waste Regulations, Environmental Emergencies Regulations* and requirements under the National Pollutant Release Inventory (NPRI)

Canada-wide Standards

Canada-wide Standards (CWS) are developed by the Canadian Council of Ministers of the Environment, which consists of federal, provincial, and territorial environment ministers, through the framework of the Harmonization Accord. Canada-wide Standards are developed in order to achieve nationally unified environmental objectives while allowing participating jurisdictions to implement complementary plans in a way that suits their individual circumstances.

Currently, CWS for mercury exist for dental amalgam waste, emissions from base metal smelting and incinerators, and mercury-containing lamps. A CWS for coal-fired power for electricity generation is currently under development.

Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

The Agreement outlines how the governments of Canada and Ontario will cooperate and coordinate their efforts to restore, protect and conserve the Great Lakes basin ecosystem. Actions include encouraging the use of mercury-free products, alternative fuels and better technology to reduce and monitor mercury pollution. Additional activities include expanding recycling programs, decommissioning current mercury sources and historic contamination. Cooperative programs with business, industry and local community groups are essential to the continued success of these efforts. One of the anticipated results of this agreement is a 90% reduction in mercury by 2010.

International Initiatives Include:

- Great Lakes Binational Toxics Strategy
- Commission for Environmental Cooperation – North American Regional Action Plan on Mercury
- Aarhus (Heavy Metals) Protocol under the UN ECE Convention on Long-range Transboundary Air Pollution
- United Nations Environment Programme, Global Mercury Programme
- Conference of New England Governors and Eastern Canadian Premiers

WWW.EC.GC.CA/MERCURY