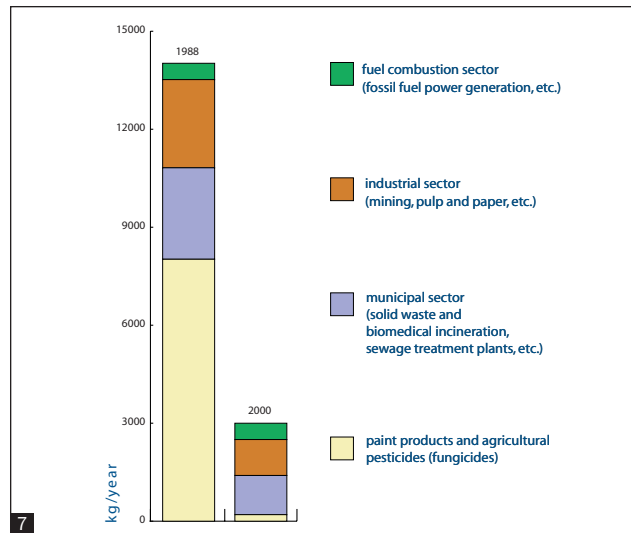




6. The most up to date advisories on mercury levels in fish can be found in the Guide to Eating Ontario Sport Fish.



7. Mercury releases in the Great Lakes basin have been cut by more than 11,000 kg since 1988.

## Fish advice!

Despite some notable success in cleaning up many of the largest sources of mercury pollution, residual levels in the environment continue to contaminate the food chain because of the persistence of mercury. In recent years, mercury contamination has been responsible for 22 percent of the fish consumption advisories issued for Lake Superior, 25 percent of those for Lake Ontario, 35 percent for Lake Erie, 50 percent for Lake Huron and 99 percent

for Ontario's inland lakes. In fact, high levels of mercury found in fish from the St. Clair and Detroit Rivers were the main reason Ontario began its fish monitoring and sport-fish consumption advisory programs in the first place. The most up-to-date advisories on mercury levels in fish can be found in the Ontario Ministry of the Environment's biennial Guide to Eating Ontario Sport Fish.



Canada-Ontario Agreement  
Respecting the Great Lakes Basin Ecosystem

To learn more about COA and reducing mercury in the Great Lakes, contact:

**MERC**  
[www.pollutionprobe.org](http://www.pollutionprobe.org)

**Merc-Divert Superior**  
[www.ecosuperior.com/mercdivertsuperior.html](http://www.ecosuperior.com/mercdivertsuperior.html)

**Environment Canada**  
[www.on.ec.gc.ca](http://www.on.ec.gc.ca)  
(416) 739-4809

**Ontario Ministry of the Environment**  
[www.ene.gov.on.ca](http://www.ene.gov.on.ca)  
(416)325-4000 OR 1-800-565-4923



**M**ERCURY IS A NATURALLY OCCURRING, THOUGH RELATIVELY RARE ELEMENT – it makes up less than 0.00001 percent of the earth’s crust – and would normally be found only in deep deposits of metal-bearing rock. One-half to two-thirds of the biologically available mobile mercury that can be measured in the environment is the product of some kind of human activity. A trace element in many ores and coal deposits, humankind continues to dig this neuro-toxin out of the ground and put it back into circulation.

The 1994 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) targeted mercury pollution for control. Governments on both sides of the border have taken strong positions to minimize its use and release. Under the 1994 COA, mercury releases to the Great Lakes have been reduced by some 78 percent, from the 1988 base year.

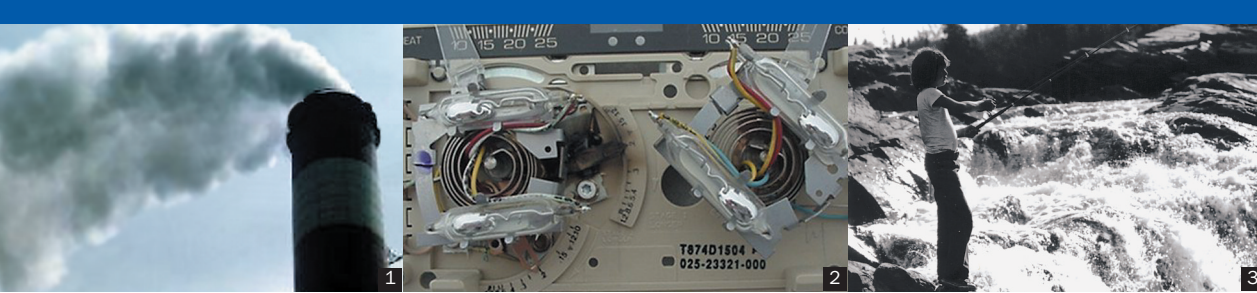
The major reductions came from the fact that many manufacturers dramatically reduced the amount of mercury added as an anti-fouling agent to paints, and the use of mercury-based slimicides and fungicides was largely eliminated. These had been used for treating pulp logs stored in water, and to prevent mold and mildew from ruining seeds, or damaging golf greens. The annual release of mercury into the Great Lakes Basin was cut from more than 14,000 kilograms a year to just under 3,000 kilograms.

## REDUCING MERCURY IN THE GREAT LAKES:

GETTING THE JOB DONE,  
ONE STEP AT A TIME

CANADA-ONTARIO AGREEMENT RESPECTING  
THE GREAT LAKES BASIN ECOSYSTEM

Canada  Ontario



1. mercury is a by-product of coal combustion
2. thermostats containing mercury
3. Consider consumption advisories when eating Great Lakes fish!

*While much has been done, there is still a lot more we can do to prevent mercury contamination.*

## Mercury pollution is a global problem

Despite these measures, substantial amounts of mercury are still being emitted from the smokestacks of coal-fired power plants, incinerators, cement plants and steel mills because of the fuels being burned. Once in the air, mercury compounds can be carried on the prevailing winds hundreds of kilometres across the continent – both north out of the United States and south out of Canada – before drifting to earth or being washed from the sky in a rainstorm, somewhere in the Great Lakes Basin.

“Atmospheric deposition is now the major source of mercury to Ontario’s lakes, soil and vegetation,” says the Ontario Ministry of the Environment’s Ian Smith. “And the primary causes are coal combustion, not just in Canada but in the United States, Russia and China, plus continued mercury use in products.

“If there’s mercury in the air, it ends up in a lake. And if it’s in the lake, a portion of it ends up in the fish,” says Smith. While mercury can be locked up in the sediment, it can also be released through biological processes such as methylation and biomagnification. Researchers discovered more than 20 years ago that mercury is a toxic natural element. Despite the reductions in use and release that have taken place, people need to be aware and consider fish consumption advisories when eating fish, which is the major source of mercury for most people.

## We are still using mercury

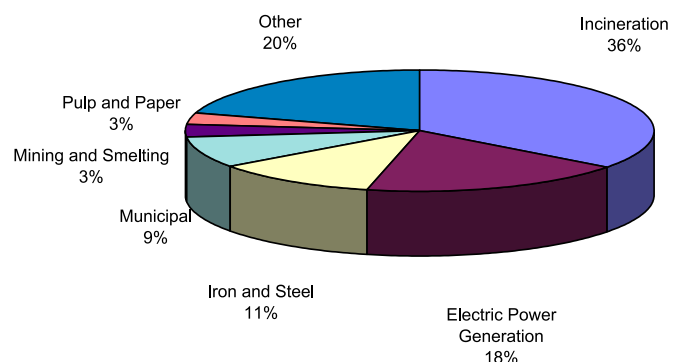
While the big industrial stacks are responsible for almost half of the mercury released into the environment each year, they are not the only sources. Mercury is a unique metal: liquid at room temperature, it expands and contracts evenly as the temperature changes, it is a great electrical conductor, and combines readily with other metals. Because of these unusual properties, it has been used in a variety of hospital instruments, dental amalgams, industrial processes and popular consumer products, including batteries, thermometers, smoke detectors, fluorescent lights, high intensity discharge lamps, switches, thermostats and many electronic devices.

If properly used, these products should not pose an immediate health threat. But once they are worn out or broken and discarded, “most end up in the municipal waste stream and are trucked to a landfill,” says Smith. Or maybe, if you live in the United States, they’ll wind up at an incinerator, where incineration is much more prevalent than in Canada.

A renewed COA will take steps to further reduce the use and release of mercury into the environment. Product substitution and alternative fuels, improved abatement technology and monitoring capabilities, expanded recycling programs, the decommissioning of current sources, the remediation of mercury contaminated sediments, and the cleanup of historic contamination problems will be undertaken. Cooperative programs with business, industry and local community groups will be essential to the success of these efforts.

## The MERC ‘Switch Out’

The Mercury Elimination and Reduction Challenge (MERC) is the first all-Canadian program dedicated to the removal and recovery of mercury-based switches from old cars and trucks before the vehicles are recycled. Industry, government and environmental groups are working to create an efficient, cost-effective and sustainable process to recover a minimum of 85 percent of automotive mercury switches.



4. mercury sources in Ontario by sector (2000)

Mercury switches are still used in hood and trunk lighting, anti-lock brakes, discharge lamps and navigational displays. The average automotive switch contains a gram of mercury, which means there are approximately 5.3 tonnes of mercury currently travelling up and down the highways of Ontario.

“Manufacturers have come a long way in reducing the use of mercury switches,” says Environment Canada’s Bob Krauel. “They are committed to completely ending the use of mercury in convenience hood and trunk lights by 2004.” That move alone should eliminate over one-half of the mercury still used in car switches. Anti-locking brake assemblies can have several switches inside them.

Under a six-month pilot project, old mercury switches are being removed and collected on a voluntary basis at 11 automotive dismantlers across southern Ontario. “It’s a simple job to locate and remove the switches at the scrap yard,” says Krauel. “The key will be to identify the full costs of the collection program and then to find interested partners to sustain the process.”

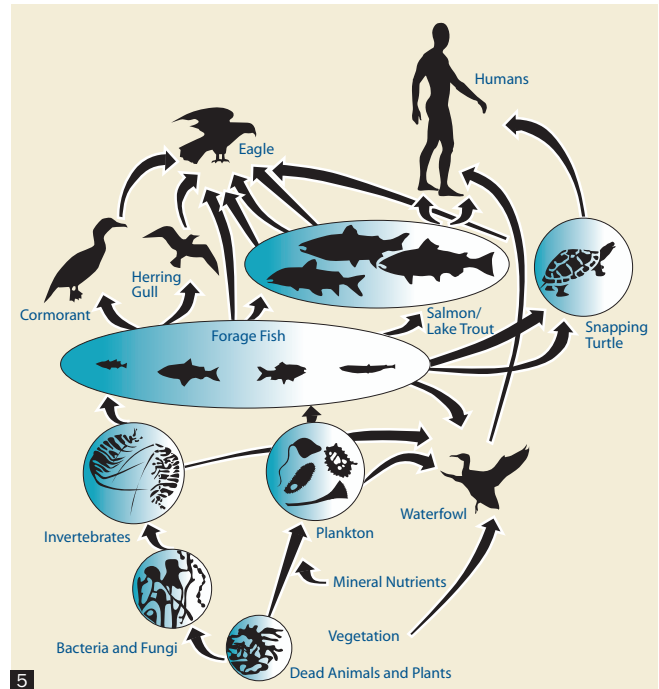
If the pilot program is successful, the collection system will be expanded across Ontario and to other provinces, with the goal of Canada-wide coverage in the next two to three years.

Pollution Probe has partnered with Ontario Power Generation, the Ontario Ministry of the Environment and Environment Canada to deliver the initial phase of the program. MERC has also garnered the support of key industry players such as the Ontario Automotive Recyclers Association (which is implementing the pilot phase), the Canadian Vehicle Manufacturers Association, the auto scrap and steel recycling sectors, and several private sector firms. “It’s a fine example of a productive partnership,” says Krauel.

## Mercury is a real headache in the north

Mercury contamination is a serious concern throughout the Great Lakes Basin, but it has been particularly worrisome in the north. Residents north of Superior eat a lot of fresh fish, and many of these fish come from lakes on the Canadian Shield where mercury tends to accumulate in fish. It is estimated that over 1,200 kilograms of mercury, from all sources, are deposited onto and into the Lake Superior Basin each year, most of it in rainfall.

Reducing those mercury levels is going to take the coordinated efforts of all three levels of government, especially to reduce long-range transport from other countries, plus a lot of intensive hands-on work at the grassroots level. EcoSuperior, based in Thunder Bay, Ontario, is another non-profit, community-centred organization that can deliver a key component of an overall effort on a local basis.



5. food chain biomagnification

EcoSuperior’s “Merc-Divert Superior” has targeted its efforts at capturing and diverting the mercury contained in a number of consumer products, such as button batteries, fluorescent lights and thermostats. The program now operates in Thunder Bay, Sault Ste. Marie and Marathon.

The button battery program is supported by the Great Lakes Renewal Foundation, in conjunction with Thunder Bay 2002, the Ontario ministries of Environment (MOE) and Natural Resources, and Environment Canada. To date, 45 kilograms of button batteries have been diverted.

“The battery program got our foot in the door,” says Jim Bailey, EcoSuperior’s Pollution Prevention Coordinator. Technically speaking, the old mercury-filled batteries are classified as hazardous waste by MOE. “We were able to develop both a cooperative relationship and a set of conditions with MOE that would allow us to collect the batteries,” Bailey explains. “We were able to use those same conditions to set up other programs to divert significantly more mercury from disposal.”

While much has been done, there is still a lot more we can do to prevent mercury contamination. Environment Canada’s Krauel says “we have to increase public awareness about the risks of mercury and the mercury-free alternatives available. And we have to work closely with communities, industries and governments to improve the recycling and the safer disposal of products containing mercury.” With the leadership of groups like EcoSuperior and the Pollution Probe team that put the MERC program together, mercury pollution may one day be a footnote in the province’s environmental history.