Mercury (Hg) is a highly toxic liquid metal, which most people recognize as the shiny liquid in fever thermometers. It occurs naturally in the environment, but it’s also generated through such human activities as the production of electricity from coal-fired power plants, waste incineration, fuel combustion and some industrial processes.

In its most dangerous form, methylmercury, the health effects of its exposure to women of childbearing age and children can be devastating. For instance, in pregnant women methylmercury can accumulate in the fetal brain to cause brain damage. In adults, long-term exposure to the compound can damage the brain and central nervous system, causing loss of motor control, memory, hearing and vision.

Because mercury is a naturally occurring and persistent substance, it can never be completely eliminated from the environment. Canada, Mexico and the United States are therefore working together to prevent and reduce mercury pollution due to human activities. On behalf of the three governments, the Commission for Environmental Cooperation (CEC) initiated a North American Regional Action Plan (NARAP) to achieve the “virtual elimination” of new sources of mercury.

Policy changes have already helped cut the generation of mercury pollution, which has decreased in the atmosphere since the beginning of the industrial age. The elimination of certain mercury-containing chemicals used in pulp and paper production in the 1970s led to a big drop in mercury pollution. And in the 1980s, the elimination of most mercury in batteries and paints produced further significant reductions.

Today, mercury “hot spots” still dot the North American landscape. This mercury hot spot map indicates 244 locations where the amount of mercury contamination exceeds the background, or naturally occurring, level in the environment. It’s the first time such a map has been prepared for North America based on national data.

The grasshopper effect
Mercury can be deposited locally to aquatic or terrestrial ecosystems, or be carried long distances in the atmosphere from one country to another. With the right amount of solar energy, toxic substances such as old pesticides and mercury may vaporize and condense until they reach an area like the Polar regions where there is insufficient energy to re-evaporate these substances. Some scientists have concluded that this is the reason for high levels of pesticides and mercury in areas like the Arctic, far from where they were used.

A cycle of contamination
When mercury is deposited into water, microorganisms help convert it to methylmercury. Small organisms, fish and plants ingest this mercury as they feed. Contaminations increase as it is transferred up the food chain to fish, birds, animals, marine mammals and humans.

After the gold rush
Before modern mining techniques were introduced, the California gold rush that began in 1848 left a legacy of mercury pollution that continues today. As recently as 2003, health officials warned about eating fish from certain lakes and warned the public to find pockets of liquid mercury along rivers and streams.

The number one source of atmospheric mercury pollution in North America is coal-fired energy production, with some 91...