



# Time for Nature



## Are pollutants reaching the Canadian Arctic? Aulavik National Park of Canada

Canada's Arctic national parks are nearly pristine by many standards. But even the Arctic is susceptible to pollution. Chemicals from faraway industrial and agricultural sources can affect the northern environment.

Parks Canada scientists have been monitoring water quality in the Thomsen River in Aulavik National Park of Canada since 1999. Results to date show the river's water quality to be excellent. However, scientists have detected traces of the pesticide lindane in their samples. The pesticide likely came from as far away as Asia.



Water quality of the Thomsen River is generally excellent. © Parks Canada, Lynch, W., 1994.

## How do pollutants from Asia arrive in the Canadian Arctic?

Contaminants reach the Arctic by long-range transport: they travel on air and ocean currents. The atmosphere is the primary pathway. For example, contaminants emitted to the atmosphere far to the south can remain in the atmosphere for days. Some persist for months or even years. Yet in just a few days, winds can transport those contaminants across whole continents.

Once the pollutants arrive in Canada's north, cold temperatures cause the chemicals to descend from the atmosphere. The cold can then prevent them from being taken up again. The chemicals concentrate in the Arctic environment.



Parks Canada began monitoring water quality of the Thomsen River in 1999. © Parks Canada, Nancy Wong, 2000.

## What are the chemicals of concern?

Scientists who study Arctic ecosystems have found a number of contaminants from remote sources. Three types are of particular concern: persistent organic pollutants (POPs), heavy metals and radionuclides.

- POPs are mostly human-made chemicals. Pesticides such as DDT, toxaphene and chlordane are POPs, as is the lindane found in Aulavik



waters. Other POPs include PCBs, dioxins and furans, which are chemicals that originate from industrial processes.

- Heavy metals of concern include mercury, cadmium and lead. These occur naturally in rocks and windblown dust and are produced during mining and smelting, burning of fossil fuels, and waste incineration.
- Radionuclides include isotopes of strontium, cesium, polonium and plutonium. They occur both naturally and as a result of nuclear weapons testing and nuclear accidents.

All of these chemicals are toxic and persistent in the environment. Each can accumulate in human and animal tissues.

### Do the contaminants reach the food chain?

Contaminants may accumulate and biomagnify, as Arctic plants and animals take up the pollutants. Animals at the top of the food chain, such as predatory fish and marine mammals, can accumulate high levels of contaminants. Since these animals are often important in the diets of Arctic people, human health can be threatened. In fact, the potential for human exposure to contamination is greater in the Arctic than many other regions.



Long range transport of contaminants is a concern even in areas where there are no local pollution sources. © Parks Canada, Nancy Wong, 2000.

### Can we reduce the threat to Arctic ecosystems?

The main sources of contaminants are far outside the Arctic. While Canada and other northern countries cannot prevent them from reaching Arctic environments, cooperative global action can help resolve the issue.

For more information visit [www.pc.gc.ca/aulavik](http://www.pc.gc.ca/aulavik)