



NORTHWEST TERRITORIES CONTAMINANTS FACT SHEETS

Persistent Organic Pollutants (POPs)

People in the Northwest Territories are becoming more aware of contaminants in the environment. Persistent organic pollutants (POPs) are one of the major groups of contaminants. This fact sheet will describe what POPs are, where they come from, how people may be exposed to POPs, and what this means to the health of people who eat traditional food in the Northwest Territories.

POPs are made by humans.

The following POPs are chemicals that have been used as pesticides for killing insects or diseases that attack crops. They also continue to be used to kill insects that spread disease in humans in tropical environments. These are:

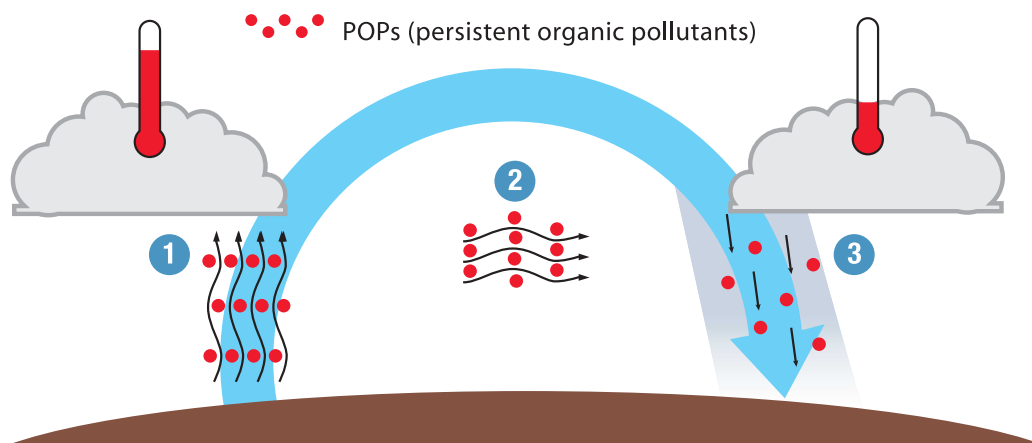
- Toxaphene
- Chlordane
- Aldrin and Dieldrin
- Mirex
- DDT (dichloro-diphenyl-trichloroethane)
- HCH (hexachlorocyclohexane)

Other POPs come from industrial processes, either produced intentionally or as by-products of other processes. These are:

- PCBs (polychlorinated biphenyls)
- HCB (hexachlorobenzene)
- Dioxins and Furans

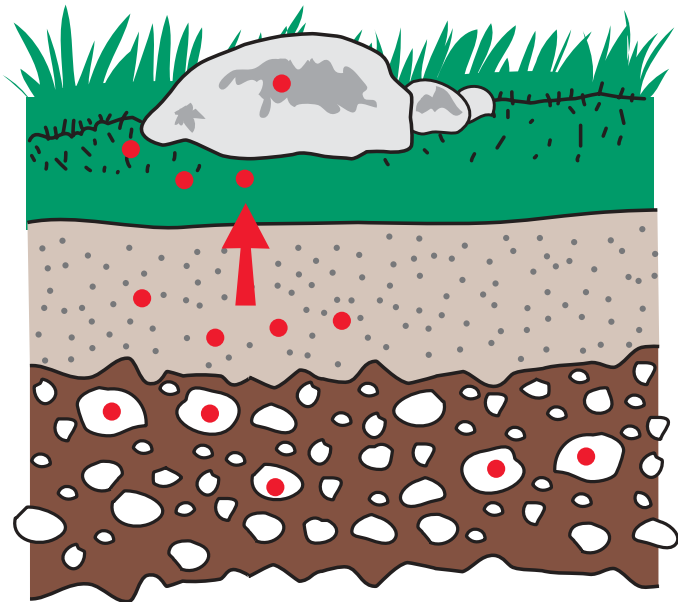
All POPs have common properties.

All POPs are persistent, meaning that they last a long time in nature. POPs are also toxic, which means they can cause harm or be poisonous to living things. POPs can travel through air or water currents for thousands of kilometres. On warm days, POPs can slowly evaporate into the air. They can then travel for long distances through a series of short hops until they reach cold arctic regions. This is called the grasshopper effect. Most POPs that are present in the Northwest Territories come from sources in other countries and southern Canada.



- 1 In warm temperatures POPs evaporate
- 2 POPs move in air by winds to colder places such as the North
- 3 In cold temperatures POPs condense and fall to earth

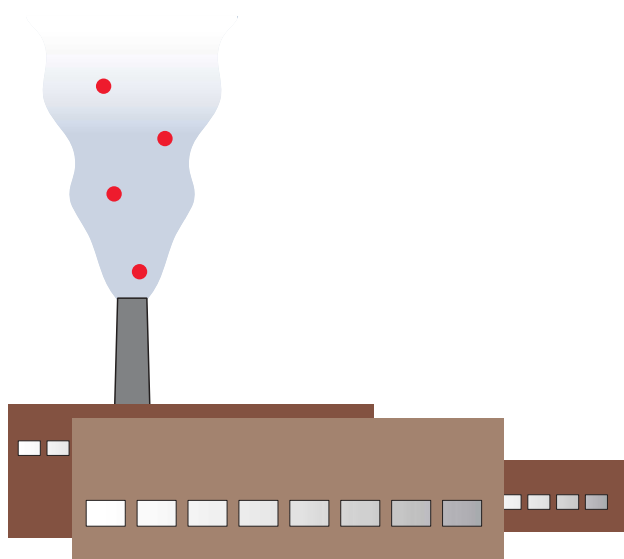
POPs can be absorbed by plants, wildlife and people. POPs are stored mostly in fat. Animals that only eat plants and are naturally lean do not accumulate POPs. On the other hand, animals (predators) that eat other animals (prey) are higher on the food chain and can build up POPs more easily. This is called biomagnification.



• Contaminants

Each POP was made for a different purpose.

Some of the POPs listed previously which are commonly detected in the North are described in more detail below. It is important to stress that the effects listed below were based on exposure to very high levels of these POPs. Levels found in the NWT are much lower.



• Contaminants

Toxaphene is an insecticide made up of several hundred chemicals. It was used on crops in the USA. Wildlife and people are exposed to toxaphene mostly through food. Fish are particularly sensitive to the effects of toxaphene. At levels much higher than typically found in the North, toxaphene can damage the kidneys, lungs, immune and nervous systems of humans.

The use of toxaphene was restricted in Canada, the USA and western Europe in the early 1980s. Central America, eastern Europe and Russia used toxaphene until the early 1990s. It is still used on crops in some tropical countries.

Chlordane was used as a pesticide on crops, lawns and gardens in North America from the 1940s to 1980s.

It is a persistent contaminant that can be transported long distances by winds. It can build up through the food chain in birds, fish and mammals. At high levels, it is known to damage the liver, nervous system and digestive tract of animals.

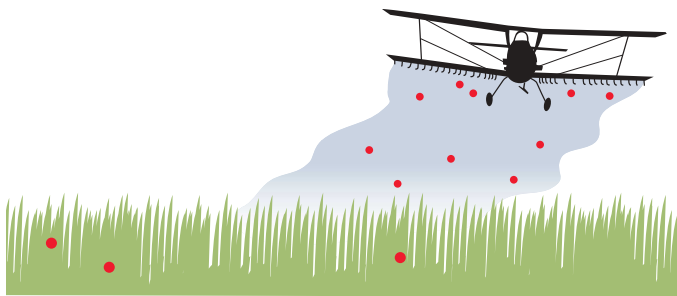
High levels of chlordane were found to cause cancer in laboratory experiments on animals. Chlordane has been banned in Canada and the USA since 1988, and is no longer produced.

Aldrin and Dieldrin are two related pesticides used from the 1950s to 1970s. Aldrin turns into dieldrin once it enters the environment, an animal or a person. In animal experiments, high levels of dieldrin have been found to affect the immune system and kidneys, as well as the central nervous system. Most uses of aldrin were banned in the 1980s.

Mirex is a chemical that was used in the early 1960s to late 1970s to kill ants and as a fire retardant. Also known as perchlordecone, mirex is one of the POPs that lasts the longest in nature.

Mirex can enter people and animals through food or exposure to contaminated soils. Mirex is believed to harm the development of animals, and is particularly harmful to crustaceans, such as shrimp, crabs, and the tiny animals many fish feed on. Mirex is not commonly detected in the North.

DDT, or dichloro-diphenyl-trichloroethane, is used for controlling insects and serious tropical diseases. In the Northwest Territories, DDT was used to control mosquitoes around communities and at old military sites in the 1950s and 1960s.



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Like other POPs, it is long lasting, can travel long distances by air and water, and can be absorbed by plants and animals. DDT causes egg shell thinning in birds eggs, is toxic to fish, and has been found to cause liver cancer in laboratory rats. It can now be detected in the fat of people all over the world, but is not harmful to humans at such low levels.

Every year there is less DDT used worldwide, and levels in the environment have dropped since the 1970s. DDT was banned in North America in the early 1970s but is still used in some tropical countries. (See fact sheet on DDT for a complete description.)

HCH, or hexachlorocyclohexane, is the most abundant organochlorine pesticide in the arctic. HCH was manufactured and used a lot during the 1970s and 1980s, mostly in China, India and the former Soviet Union. Some forms of HCH are banned, but one type of HCH, called lindane, is still used in seed treatment in North America.

An agreement has recently been reached in Canada to stop using lindane to treat canola seed. Emissions of HCH have been decreasing over last 20 years.

PCBs, or polychlorinated biphenyls, were manufactured mostly for use in electrical equipment, and were also added to paints and asphalt. Their use was phased out starting in the mid-1970s.

Contaminated soils at old military installations (such as DEW-line sites) are local sources of PCBs in the Northwest Territories, but studies suggest that most of these contaminants in wildlife are not from local sources. PCBs can travel great distances from southern countries to cooler regions and have become very widespread throughout the environment.

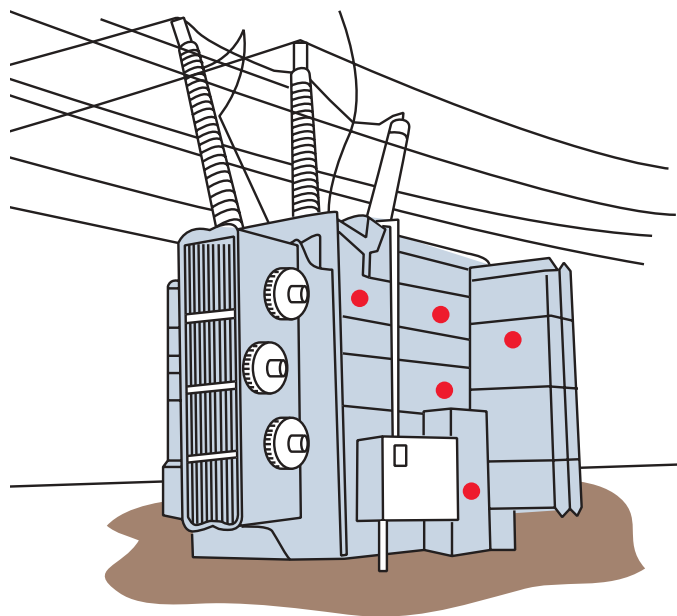
PCBs are one of the contaminants of concern in the Northwest Territories. Although they can reach elevated levels in the fat of marine mammals, the levels of PCBs in the Northwest Territories are slowly declining in these mammals. Although their health effects are not well understood, they appear to cause developmental problems in the nervous systems of children and foetuses.

Canada now has strict laws regulating the use, storage, handling and disposal of PCBs. See fact sheet on PCBs for a complete description.

HCB, which stands for hexachlorobenzene, was used as a seed pesticide, and in fireworks, ammunition and rubber. HCB is absorbed by the body in fat. At high levels, HCB causes skin problems, and is believed to affect the liver, immune system, kidneys and blood. In animal studies, there is some evidence that it may cause cancer.

Dioxins and furans are produced as by-products of several industrial processes, and are also released when garbage is burned. Dioxins and furans can travel long distances by air and water, and can be absorbed by plants and animals.

Better standards for incinerators have greatly reduced the levels of dioxins and furans in the environment. Studies for the Northwest Territories suggests that levels in fish are very low. (See fact sheet on dioxins and furans for a complete description.)



● Contaminants

People are taking action against POPs.

People are becoming more aware of the health and environmental concerns arising from POPs, and are taking action to solve the problems. Many countries have banned the production, use, or import of different POPs. Where certain POPs can be used safely, countries have adopted laws and regulations that strictly control their storage, use, handling and disposal.

Because of these actions, there are generally less POPs being made or used worldwide. As a result, levels of some POPs in the environment are dropping. Other POPs however, are still slowly being released from soil and large lakes, where they have built up for decades.

A major victory in the fight against POPs was won in 2000, when a United Nations treaty was finalized in which 122 countries agreed to phase out POPs. Canadian Aboriginal groups through the Canadian Arctic Indigenous Peoples Against POPs helped to lead the effort that produced the international treaty.



Good News...



Traditional foods are safe to eat!

In general, levels of POPs in animals, fish and waterfowl in the Northwest Territories are very low and becoming lower. PCBs are considered the pollutant of most concern in traditional foods, particularly in marine mammals. But marine mammals can still safely be eaten. In fact, traditional foods are some of the healthiest foods available.

To reduce exposure to POPs you can:

- Follow any special health advisories.
- Avoid breathing smoke from burning garbage.
- Eat smaller, younger animals.

Detailed fact sheets in this series are available on PCBs, DDT and dioxins and furans. Fact sheets are also available for important mammals, fish and birds.

Did you know...

A total of 122 countries agreed to phase out the group of chemicals that includes PCBs. Canadian Aboriginal groups helped to lead the effort that produced the international treaty.

For more information please contact:

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