

Heavy Metals, Persistent Organic Pollutants, Environment and Health

Which contaminants are found in the Environment?

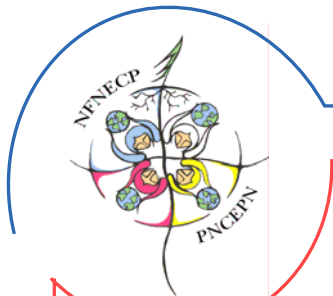
Heavy metals and persistent organic pollutants (POP) are found in the Canadian environment. These contaminants are due to local industrial and agricultural activities but may also come from other regions of the world. In this case they have been transported over long distances by atmospheric and oceanic currents.

Amongst the activities responsible for the emission of the pollutants are:

- Mining industry
- Burning of oil and coal
- Incineration of waste
- Use of pesticides in agriculture, etc.

Heavy Metals and persistent organic pollutants

Contaminants	Emission Sources
Heavy metals	
Mercury	Hydroelectric reservoirs, incineration of waste, etc.
Cadmium	Mining industry, fusion (treatment) of minerals, etc.
Arsenic	Gold mining
Lead	Coal-fire electricity generating stations, incinerators, etc.
Persistent organic pollutants (POP)	
PCB or polychloric bipheniles	PCB or polychloric bipheniles Refrigerants, transformer lubricants, capacitors, and other electrical material
Pesticides: DDT, toxaphene, chlordane, lindane, etc.	Agriculture (used to control parasites.)
Dioxins and Furans	Incineration of domestic, industrial and hazardous waste, etc.
PAH Polycycling aromatic hydrocarbons	By-products of combustion



Where Are These Contaminants?

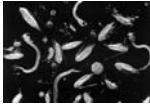




These contaminants are found throughout our physical environment.

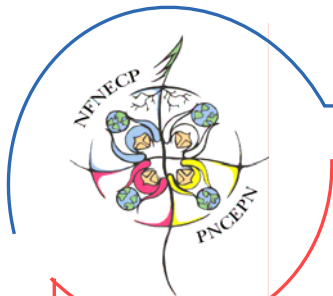
- Air
- Water (lakes, rivers, oceans, etc.)
- Soil
- Sediments
- Snow and rain
- Ice, etc

In general the quantity of these contaminants found in the environment is very low. However, plants and animals are susceptible to be contaminated by these pollutants and to concentrate them in their tissues.

Are these contaminants hazardous to our health?

The answer to this question is uncertain. Contaminants present in the physical environment generally do not represent a risk to the health. However, when they are concentrated in plants and animals, they may represent a risk to the health of humans that consume them. Here is an example:

↓		Plankton , first link of the food chain, absorbs pollutants from contaminated water
↓		Small crustaceans (mysides), second link of the chain, concentrate the pollutants from the plankton
↓		Smelt , third link, accumulate contaminants from the crustaceans and plankton
↓		Trout , fourth link, concentrate contaminants from the smelt, crustaceans and plankton
		By eating trout, humans consume the food chain.



Here are some examples of possible projects

- Investigating eating habits and presence of contaminants in samples of human tissue (ex.: blood and hair);
- Investigating into the degree of exposure to contaminants through the analysis of tissue taken from fish, birds and game, etc.;
- Elaboration of guidelines on fish consumption; etc.

To learn more about contaminants in the environment

Health Canada general website – First Nations and Inuit Health:

http://www.hc-sc.gc.ca/fnih-sponi/index_e.html

- First Nations Assembly

<http://www.afn.ca/article.asp?id=2396>

Web sites on heavy metals:

- Heavy metals (Indian and Northern Affairs Canada - INAC)

[http://nwt-tno.inac.gc.ca/pdf/contaminants/Hevy Metals_e.pdf](http://nwt-tno.inac.gc.ca/pdf/contaminants/Hevy%20Metals_e.pdf)

- About Heavy Metals (Canada's National Program of Action for the Protection of the Marine Environment from Land-Based Activities):

http://www.npa-pan.ca/en/issues_heavy_metals.cfm

Web sites on persistent organic pollutants:

- Persistent Organic Pollutants (Indian and Northern Affairs Canada – INAC):

http://nwt-tno.inac.ainc.gc.ca/pdf/contaminants/POPs_e.pdf

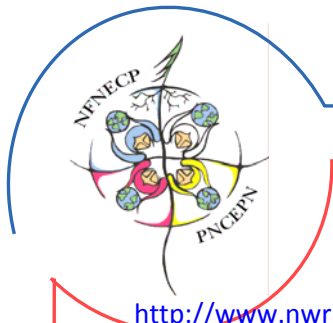
- Environment Canada Website [Clear Air Online]

<http://www.ec.gc.ca/cleanair-airpur/default.asp?lang=En&n=8F6FD286-1>

- United Nations Environmental Program- Chemicals

<http://www.chem.unep.ch/pops/default.html>

- Persistent organic pollutants and mercury (Environment Canada)



National First Nations Environmental

Contaminants Program (NFNECP)

<http://www.nwri.ca/threatsfull/ch4-1-e.html>

Websites on contaminants and traditional foods:

- Environmental contaminants and traditional food – Workshop

<http://64.233.167.104/search?q=cache:MTnlHQ0TJ1oJ:www/cssspnql.com:8080/cssspnql/ui/health/documents/contaminantseng.pdf+workshop+on+environmental+contaminants+and+traditionnal+diet&hl=fr&ct=clnk&cd=1&gl=ca>

- Environmental Damage and Aboriginal Health (National Indian & Inuit Community Health Representatives Organization)

<http://www.niichro.com/Environ/Enviro1.html>