

Who We Are

This study is led by:

Dr. Malek Batal, University of Ottawa
Dr. Laurie Chan, University of Ottawa,
Dr. William David, Assembly of First Nations

With contributions from:

Dr. Harold Schwartz, Health Canada

FOR MORE INFORMATION, PLEASE CONTACT:

Lynn Barwin, National Coordinator

Phone: (613) 562-5800 x 7214

Email: fnfnes@uottawa.ca

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www.fnfnes.ca



First Nations Food, Nutrition and Environment Study (FNFNES)

Pharmaceuticals in Surface Water Component

The FNFNES aims to collect information from 100 First Nation communities across Canada. One of the five components of the study is the **Pharmaceuticals in Surface Water Component**.

Due to technological advances in analytical techniques, pharmaceuticals can now be detected in minute quantities and are being recognized as emerging priority pollutants. The objectives of this component are:

- 1) To establish a baseline level of human and veterinary pharmaceuticals in surface water on reserves in Canada.
- 2) To determine the environmental exposure of fish and shellfish (staples in First Nations' diet) to selected pharmaceuticals in surface water on reserves in Canada.
- 3) To establish a pharmaceutical priority list for future health and environmental effects studies.

Why Study Pharmaceuticals?

Currently there are over 24 000 pharmaceuticals that are approved for human and veterinary use in Canada. However, until recently, the fate of pharmaceuticals in the environment has gone largely unnoticed. Due to technological advances in analytical techniques, pharmaceuticals are now being detected in the environment and are recognized as priority pollutants. By measuring the levels of these pharmaceuticals in water, we can estimate the effect these compounds have on wildlife and the ecosystem.

Where will the water be sampled?

Each community will choose 3 surface water bodies that they feel are important to test.

How will the water samples be collected?

The community's Environmental Health Officer will collect the samples after consultation with the community.



How Pharmaceuticals enter First Nation Communities

Pharmaceuticals enter the environment through many different sources. Surface water used by First Nation's communities may be contaminated by the following:

- **Personal Consumption-** Most pharmaceuticals are not completely absorbed in the body. Many unabsorbed pharmaceuticals are excreted unchanged through urine and feces and are discharged continually, some of which end up in our waterways.
- **Large Scale Animal Feeding Operations-** Some farm animals are constantly fed antibiotics in order to increase production. Unchanged pharmaceuticals may be released into the watershed through animal waste via surface runoff.
- **Aquaculture-** Fish and crustaceans on fish farms are fed a variety of compounds such as antibiotics, pesticides and fungicides in order to control diseases.
- **Pharmaceutical Manufacturing Companies-** Factories that use or manufacture pharmaceuticals release these chemicals as sewage that may enter surface or groundwater systems as contaminants.