



Arsenic

Arsenic is a non-radioactive contaminant associated with historic low-level radioactive waste (LLRW) in Port Hope.

As part of Port Hope Area Initiative (PHAI) activities, the waste is being cleaned up and sites remediated to meet specific levels for contaminants as set out in the Waste Nuclear Substance License, the regulatory document overseen by the Canadian Nuclear Safety Commission (CNSC).

What is arsenic?

Arsenic is a naturally occurring element present in small amounts in food, drinking water, and soil. It also has a number of industrial uses.

Arsenic – organic and inorganic

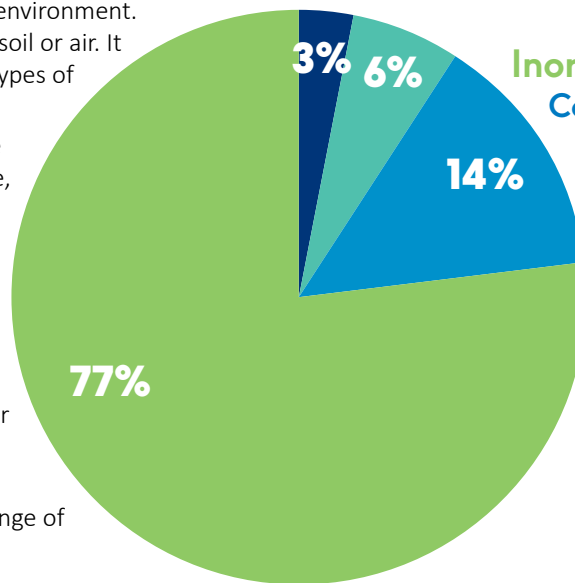
Organic arsenic occurs naturally in the environment. It can enter food supply through water, soil or air. It is typically found at low levels in many types of foods such as seafood and shellfish.

Inorganic arsenic is usually found in the environment as a result of industrial use, and can be found in food such as fruit juice, rice and apples.

People are exposed to arsenic every day, primarily through store-bought foods.

Arsenic concentrations in foods sold in Canada are low and have been stable for many years.

Long-term exposure to high levels of inorganic arsenic can produce a wide range of health effects.



Inorganic Arsenic
Contribution to lifetime cancer risk for a typical Canadian, drinking municipal water.*

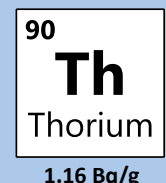
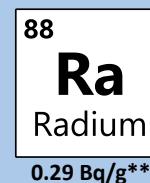
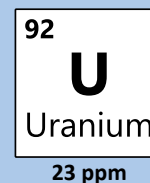
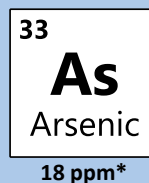
*Health Canada. 2006. *Arsenic in Drinking Water.*

- Store bought food
- Drinking water
- Soil/dust
- Home garden

What are the PHAI Cleanup Criteria?

The PHAI Cleanup Criteria sets the levels to which CNL will clean up soil in areas contaminated with LLRW.

Four contaminants are identified as “signature parameters” for LLRW.



*Parts per million ** Becquerel per gram

New criterion for arsenic

CNL has requested that the Canadian Nuclear Safety Commission consider a change in the cleanup criterion for arsenic from the **current 18 ppm to 52 ppm**.

CNL commissioned Canadian risk assessment experts, who frequently work with Health Canada; the Ontario Ministry of the Environment, Conservation and Parks; and Public Health Ontario, to develop the revised criterion for arsenic.

The experts followed federal risk assessment guidance set by Health Canada to determine the value for the revised criterion and have incorporated data collected in Port Hope to ensure the revised cleanup criterion reflects local conditions.



Inorganic arsenic in the Port Hope environment

Inorganic arsenic is present in some Port Hope soils from both past ore-refining practices (Eldorado) and as a result of other historical industrial practices not related to the nuclear industry. Inorganic arsenic does not bioaccumulate, or become concentrated inside the bodies of living things. Instead, it is absorbed or ingested and then passed back into the environment. It does not move up the food chain from one species to another. Further, studies of trees growing in arsenic-contaminated soil in Port Hope show that there

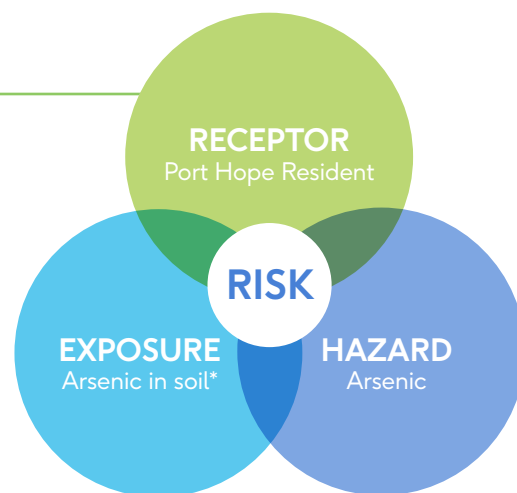
is no uptake of contaminants by the trees. Studies undertaken on fish tissues during the Environmental Assessment did not show measurable levels of contaminants related to the presence of low-level radioactive waste in the environment.

Additionally, inorganic arsenic does not break down in soil but can be slowly carried through soil by groundwater movement. That is why low levels of inorganic arsenic can be found on properties even after all of the low-level radioactive waste has been removed.

Risk assessment

A risk assessment is a highly conservative regulatory process designed to limit risk to the public. It estimates potential adverse effects on human and ecological receptors from exposure to environmental impacts and seeks to be protective of human health and the environment. The assessment considers three factors: receptor, exposure and hazard. **All three factors must overlap for a risk to be identified.**

Results of the risk assessment that was completed to change the criterion for arsenic indicated a low increase in risk to residents within Port Hope and **did not change the risk profile for residents given the levels of arsenic currently present in the local environment.** The increase in risk falls within the same range as is present in other Canadian communities without known sources of arsenic contamination, depending on their local geologic conditions and sources of drinking water.



**Exposure through all pathways*

How can I learn more?

Health Canada. Arsenic in Drinking Water. 2006.

<https://www.canada.ca/en/health-canada/services/healthy-living/your-health/environment/arsenic-drinking-water.html>

Health Canada. Arsenic. Arsenic - Canada.ca

<https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/arsenic.html>

Join the Conversation!

Visit **PHAI.ca** for more information on the application process, engagement opportunities, providing your feedback to CNL.

