

CNL Proposal to Change PHAI Cleanup Criteria

What is the PHAI Cleanup Criteria?

The past refining practices of former Crown corporation, Eldorado Nuclear Limited, generated waste products comprised of sand, silt, soil and fill intermixed with uranium and radium processing residues and industrial wastes.

When identifying low-level radioactive waste (LLRW) during testing, four elements are considered “signature parameters” - uranium, radium-226, thorium-230 and arsenic.

The Cleanup Criteria (CC) sets the levels to which CNL will clean up each of these radioactive and non-radioactive elements found in areas contaminated with LLRW.

How were the current CC developed?

In 2001, the federal government engaged consultants to assist in identifying the CC with the requirement that each element could be compared to known/published criteria and, in accordance with the Legal Agreement, all remediated lands could be used for “foreseeable unrestricted use”.

Based on information available at the time, the criteria were finalized as follows (parts per million - ppm)

Arsenic	18 ppm
Uranium	23 ppm
Radium-226	0.29 (Bq/g)
Thorium-230	1.16 (Bq/g)

Why is CNL proposing to change the CC?

Since PHAI testing began in 2012 in Port Hope, CNL has collected more than 25,000 soil samples and determined that a significant number of property cleanups are being driven by the conservative criteria for arsenic and uranium in soil.

This means that remediation is required at more properties than originally intended, taking longer and making a much more significant impact on properties than originally anticipated.

This is resulting in PHAI schedule extensions and additional cost and, more importantly, causing concern from residents due to the impact on their properties and from the general public due to the predicted impact of the PHAI on the natural environment.

To avoid further lengthy delays and significant environmental damage, CNL has recommended changing the CC for arsenic and uranium.

Are the proposed new levels safe for human health?

In 2009, the CNSC published a Health Synthesis report which reviewed over 40 health and epidemiological studies concluding that there is no increased health risk to people as a result of the operations of the nuclear industry in Port Hope.

Subsequent studies commissioned by AECL and CNL have shown no increased risk with the proposed changes to the CC. (See page 2 for details)

What is the process to change the Cleanup Criteria?

CNL will continue to work closely with the Municipality of Port Hope to ensure Council and staff are kept informed. Feedback from regulators such as the Ontario Ministry of the Environment, Conservation of Parks will be incorporated as CNL follows the CNSC application and review process.

A formal CNSC review hearing is anticipated to take place in spring 2022 at the earliest.

Join the Conversation!

Visit PHAI.ca for more information on the application process, engagement opportunities, providing your feedback to CNL and how you can participate in the CNSC review hearing.

PHAI Cleanup Criteria: Arsenic & Uranium

Arsenic is a chemical element found in nature and in manufactured products. While organic arsenic is generally ingested through food, inorganic arsenic is more often obtained from environmental exposure, e.g. soil, water and air.

Uranium is a naturally radioactive metal present almost everywhere - rocks, soils, rivers and oceans – and contributes to natural background radiation.

What levels of arsenic and uranium are typically found in the LLRW in Port Hope?

Specific levels of each of the “signature parameters” will vary by location and can range from below background (naturally occurring) to **8,900 parts per million (ppm) for arsenic** and **10,877 ppm for uranium**.

What is the current CC for arsenic and uranium?

The CC for **arsenic** was **originally set at a conservative level of 18 ppm** to align with generic, province-wide standards at the time, considered to be the upper-limit of “typical” background concentrations in Ontario soils.

While 18 ppm is typical, actual levels of arsenic concentrations in soil can vary due to local geologic conditions, and may be higher than 18 ppm.

For uranium, the CC was set in 2007 at 23 ppm to align with the Canadian Council of Ministers of the Environment (CCME) guideline for agricultural and residential/parkland land use.

At the time, the MECP did not have a generic criterion for uranium in soil, so it adopted the CCME value as the provincial generic criterion.

What are the proposed new CC levels for arsenic and uranium?

CNL has recommended these changes:

Arsenic 18 ppm to 100 ppm
Uranium 23 ppm to 35 ppm

Are the proposed new levels safe for human health?

Uranium criteria was reviewed in 2012. AECL commissioned a **uranium study** of Port Hope soils using approaches used by MECP and Health Canada.

The study evaluated potential uranium exposure risk for a toddler, including possible exposures through direct contact with soil, consumption of backyard produce, ingestion of drinking water, inhalation of air, and consumption of supermarket foods.

The study recommendation was to increase the CC for uranium from 23 ppm to 35 ppm. It confirmed this was a scientifically sound approach based on the clear indication that no adverse effects to human health would occur in soil concentrations of 35 ppm for even the most exposed residential receptor (a toddler).

The CNSC and the MECP agreed that the proposed level for uranium was protective of human health and ecological receptors, and were supportive of an increase to 35 ppm.

Arsenic criteria was reviewed in 2019 when CNL commissioned risk assessment experts, Wood and Intrinsik, who frequently work with Environment Canada, Health Canada and Public Health Ontario, to examine arsenic levels in Port Hope soils and similar communities with elevated arsenic concentrations in soil, and recommend a CC level that would be protective of human health and the environment.

The study concluded with a high degree of confidence, that arsenic levels up to 100 ppm in soil are safe for human health and are not expected to result in an increase in exposure risk.

The proposed new CC levels for arsenic and uranium are based on scientific risk evaluations using site-specific information for Port Hope and will meet the intent of the Legal Agreement, allowing all properties to be used for “all current and foreseeable unrestricted uses.”

