



## **Supplementary Information**

### **Written submission from the Port Hope Community Health Concerns Committee**

In the Matter of the

#### **Canadian Nuclear Laboratories**

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Application to renew its waste nuclear  
substance licence for the Port Hope Project

#### **Commission Public Hearing**

**November 22, 2022**

## **Renseignements supplémentaires**

### **Mémoire du Port Hope Community Health Concerns Committee**

À l'égard de

#### **Laboratoires Nucléaires Canadiens**

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Demande concernant le renouvellement du  
permis de déchets de substances nucléaires  
pour le projet de Port Hope

#### **Audience publique de la Commission**

**22 novembre 2022**

**Safety for Present and Future Generations**  
**Supplementary Report on the PHAI Waste Management Project**  
Prepared by G. Edwards for PHCHCC

To: Canadian Nuclear Safety Commission (CNSC)

Regarding: Application for licence renewal of CNL’s PHAI-WMP Project –  
Canadian Nuclear Laboratories  
Port Hope Area Initiative Waste Management Project (PHAIWMP)

From: Gordon Edwards, Ph.D. [www.ccnr.org/GE\\_CV.pdf](http://www.ccnr.org/GE_CV.pdf)

On behalf of: Port Hope Community Health Concerns Committee (PHCHCC)

Date: November 9, 2022

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This submission is supplementary to one filed earlier by the Port Hope Community Health Concerns Committee (PHCHCC , henceforth called the Health Committee) entitled “A Heap of Trouble”. This report, like the earlier one, was written by Gordon Edwards at the request of the Health Committee.

Canadian Nuclear Laboratories (CNL) is seeking a ten-year licence for the massive waste management and remediation efforts associated with the Port Hope Area Initiative (PHAI). The new licence, amalgating several previous licences into one, would be referred to as the licence for the PHAI Waste Management Project.

### **Relaxation of Cleanup Criteria**

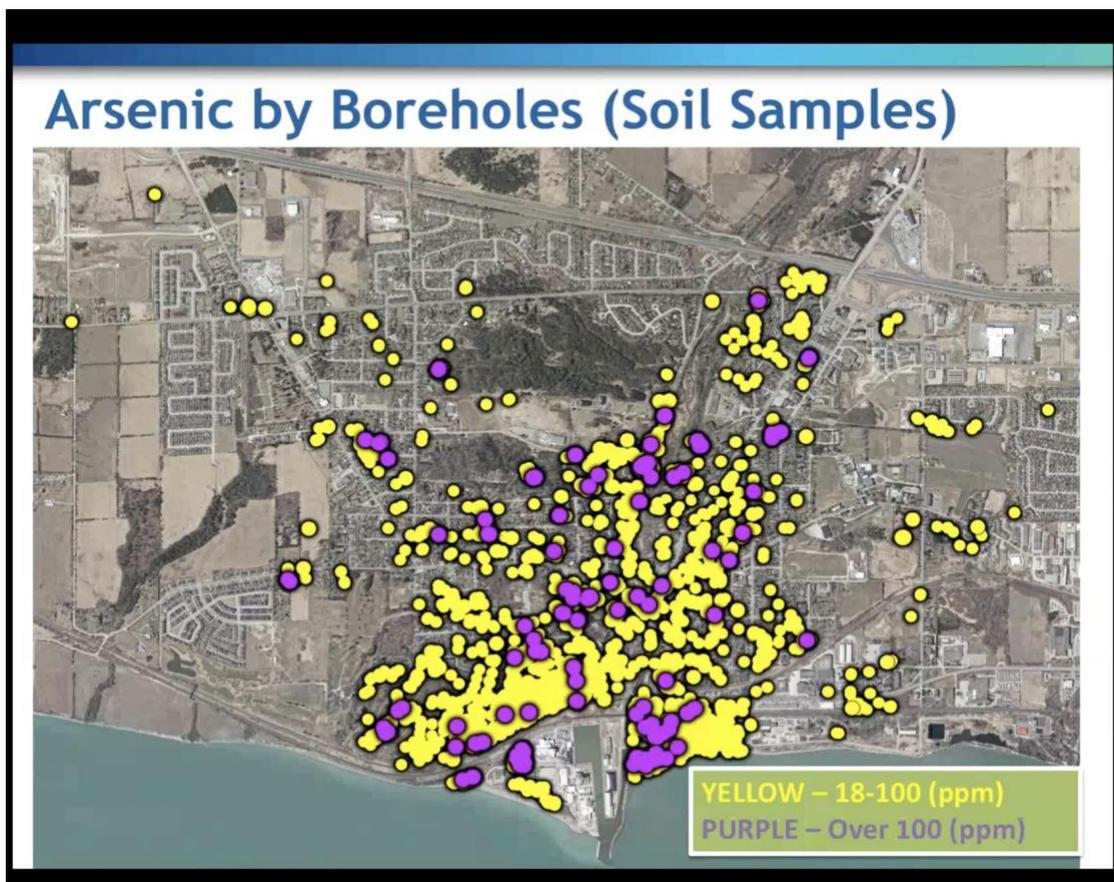
One very troubling aspect of the upcoming public licencing hearing is the decision by the proponent CNL to dampen discussion of the relaxation in soil cleanup criteria that it is hoping to introduce, by removing it from the licence application. A CNL spokesperson has confirmed that there will be an attempt later on, after the licence has been granted, to obtain CNSC approval to relax the cleanup criteria for arsenic, and possibly also for uranium.

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In particular, CNL has stated in 2021 that it would like to increase the residual arsenic concentration from 18 ppm to 100 ppm (ppm = parts per million, or milligrams per kilograms) and also increase the residual uranium contamination from 23 to 35 ppm. These numbers were posted on the PHAI web site as “Proposed Changes to PHAI Cleanup Criteria” in 2020 and 2021, but the posting has since been taken down.

The graphic below is copied from a zoom presentation by CNL for the benefit of Deputy Grand Council Chief James Marsden of the Anishinabek Nation and myself. The coloured dots indicate places where arsenic would have to be removed under the existing agreed-upon criterion of 18 ppm, whereas the purple dots indicate the much more limited removal work that would be required using CNL’s preferred, much less stringent cleanup criterion of 100 ppm.



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The Health Committee members find this CNL effort disturbing on three levels, each one progressively more disturbing. First, CNL is a private company hired by the government of Canada to carry out a cleanup with agreed-upon criteria; why are they now challenging the very criteria that were negotiated years ago, before CNL was even involved in the project ? Why are they reluctant now to do the job they are being paid to do? Second, why is CNL unwilling to have the relaxation of cleanup criteria discussed at a public hearing this year where the legitimate concerns of the public can be heard and weighed in the balance? Are they hoping to avoid public accountability by avoiding a public hearing? Third, and most disturbing of all, why are CNL spokespersons telling citizens that there are no human health concerns related to the establishment of these cleanup criteria? Chief Marsden and I heard this from the CNL spokesperson who conducted the webinar session mentioned earlier, and I have heard the same from others since.

One of the legal obligations of the CNSC according to Article 9 of the Nuclear Safety and Control Act is :

to disseminate objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects, on the environment and on the health and safety of persons, of the development, production, possession & use referred to in paragraph (a).

NSCA, Article 9

The Committee believes that CNSC has an obligation to ensure that its licensees also “disseminate objective scientific, technical and regulatory information to the public,” which is certainly not the case in this instance. In fact, CNL employees are routinely disseminating misinformation on the health question, and CNSC has a legal and a moral obligation to put an end to it.

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CNL is repeatedly denying that there are health concerns and insisting that its remediation efforts are part of an environmental cleanup without a health concerns component. This suggests that the cleanup is mainly cosmetic, thereby undermining public support for the cleanup itself. Why the disruption, the noise, the inconvenience, if there is no health danger in leaving contamination in place?

In the view of the Committee, this is not a minor infraction, but a major betrayal of public trust. Without trust the relationship between CNL, the government of Canada, and the town of Port Hope and others is problematic. As CNL states in its licence application:

The PHAI is defined by An Agreement for the Cleanup and Long-Term Safe Management of Low-Level Radioactive Waste Situated in The Town of Port Hope, The Township of Hope and the Municipality of Clarington . . . . The agreement stipulates that Canada will cleanup properties contaminated with historic LLRW so that all such properties can be used for ‘all current and foreseeable unrestricted uses’. CNL is responsible for the direction and execution of the PHAI in compliance with the Legal Agreement, the CNSC Licences and Environmental Assessment decisions. [page 5]

CNL shares information with all the public and stakeholders in a manner that earns public trust, identifies and acknowledges issues and values, and maintains community acceptance and support of the PHAI. Ongoing dialogue ensures that members of the public and key stakeholders are knowledgeable about upcoming work and project activities, and that questions, issues and concerns are identified and addressed. [page 6]

If CNL wishes to have a chance to apply for a licence amendment to relax the cleanup criteria, then only a short term licence should be granted so that the public can fully address the human health and environmental

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safety implications of CNL's proposed change of cleanup criteria in a new licencing hearing.

**Recommendation:** that no licence be granted for the PHAI Waste Management Project for a period of more than one year, unless CNL commits itself to faithfully adhering to the original cleanup criteria for uranium and arsenic throughout the term of the licence as previously agreed in connection with the PHAI agreement.

## **Arsenic and Human Health**

In fact, human health has everything to do with establishing cleanup criteria for arsenic in soil. Responsible agencies have been tightening the standards for arsenic rather than loosening them. As long ago as 2002, the US Environmental Protection Agency (EPA) wrote:

There is a growing need for cost-effective arsenic treatment. The presence of arsenic in the environment can pose a risk to human health. . . . arsenic must be removed from some sources of drinking water before they can be used.

Recently the EPA reduced the maximum contaminant level (MCL) for arsenic in drinking water from 0.050 mg/L to 0.010 mg/L, effective in 2006. Current and future drinking water and groundwater treatment systems will require better-performing technologies to achieve this lower level.

Arsenic Treatment Technologies for Soil, Waste and Water (EPA-542-R-02-004)  
[https://www.epa.gov/sites/default/files/2015-04/documents/arsenic\\_report.pdf](https://www.epa.gov/sites/default/files/2015-04/documents/arsenic_report.pdf)

The Washington State Ecology Department [Ecology] has been wrestling with arsenic contamination from the Tacoma smelter. In a public posting they note:

Ingestion of inorganic arsenic has been reported to cause more than 30 different adverse health effects in humans, including: decreased production of red and white blood cells, abnormal heart function, blood vessel damage, liver damage, kidney damage, diabetes mellitus,

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impaired nerve functioning and various forms of cancer. . . . The cancers most commonly associated with arsenic exposure are liver, bladder, kidney, lung, and non-melanoma skin cancer. . . . Workers exposed to arsenic inhalation have an increased frequency of lung cancer.

How can arsenic affect my health? [page 7]

<https://apps.ecology.wa.gov/publications/documents/0109087.pdf>

In addressing arsenic contamination in soil caused by the Tacoma smelter, the Department has set a cleanup standard of 20 ppm for arsenic in soil. In a 2021 Q&A Fact Sheet, the Department explains that State Law requires people to be protected against an increased cancer risk of one in a million, but that would require an arsenic level of no more than 0.67 ppm. Due to lack of resources, the Department has settled on a cleanup target of 20 ppm instead, which corresponds to an expected 30 cancer cases per million population.

The Washington Department of Ecology (Ecology) is addressing soil contamination within and outside the Superfund site. Ecology has limited funding for cleanup, so we have to focus on areas we are most concerned about:

**Q:** What are the cleanup levels for Tacoma Smelter Plume contamination?

**A:** The cleanup level for arsenic is 20 parts per million (ppm).

**Q:** Why is the arsenic cleanup level 20 ppm?

**A:** Ecology sets cleanup levels based on state law—the Model Toxics Control Act. For cancer-causing contaminants, we set cleanup levels to protect people against an increased lifetime cancer risk at one in a million. For arsenic, that risk-based cleanup number would be 0.67 ppm.

**Q:** What is the risk level at 20 ppm arsenic?

**A:** We estimate that being exposed to 20 ppm arsenic in soils may increase cancer risk by 30 in one million. That means in a population one million people, there may be 30 cases above the background cancer rate. In other words, there would be 30 more cases of cancer than if there were no arsenic in soil.

<https://apps.ecology.wa.gov/publications/documents/0109038.pdf>

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Since Port Hope has a population of about 17,000 we can calculate that an arsenic level of 20 ppm in soil would correspond to about 0.5 cancer cases in Port Hope. That means there is a 50-50 chance that someone in Port Hope will get cancer caused by arsenic exposure. But if the permissible arsenic level were increased to 100 ppm, as CNL has proposed, one would expect to see, in Port Hope, about 2.5 cancer cases in a population of 17,000. Since arsenic is eternal, this medical toll could recur every generation or so.

The Canadian Council of Ministers of Environment (CCME) has recommended a maximum soil level of arsenic contamination of 12 ppm, based on human health considerations alone. The CNL proposal of 100 ppm is more than 8 times more permissive than that. <https://ccme.ca/en/res/uranium-canadian-soil-quality-guidelines-for-the-protection-of-environmental-and-human-health-en.pdf>

Recommendation: The CNSC should not approve any relaxation in the cleanup standards for uranium or arsenic or any other contaminant, but should require CNL to abide by the cleanup criteria that were agreed to many years ago.

Recommendation: The CNSC should strongly reproach CNL for denying the health dangers of radioactive and non-radioactive contaminants that are involved in the cleanup and assess heavy fines if such behaviour is not totally eliminated.

### **Inventory Problems**

In our previous submission, “A Heap of Trouble”, it was pointed out that in a relatively short time the becquerel count for thorium-232 will be multiplied by a

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factor of 10 within the engineered mound because of the secular equilibrium that will occur between thorium-238 and its radioactive progeny. For similar reasons, the becquerel count of radium-226 will be multiplied by a factor of 9. Thus the combined becquerel count associated with these two radionuclides will increase by almost an order of magnitude after they have been emplaced in the mound.

Moreover, any radium deposited in the mound will, within months, be in equilibrium with the radon gas that it produces, meaning that the number of becquerels of each will be the same. Moreover this equilibrium will last for centuries at a gradually declining rate. Since radon gas builds up and is seven times heavier than air, depending on the amount of radium in the mound the resulting radon gas can be a serious health problem as it will quite easily migrate out to the surface and stay low to the ground.

However, in the licensing documents, there is no mention whatsoever of the radioactive inventory of the material to be emplaced in the mound, nor of the final anticipated inventory. This is very unscientific, very impractical, and extremely unhelpful to those who will have to live with this mound for centuries. It is astounding that the CNSC, which claims to be science-based regulator, would allow radioactive wastes to be described only in terms of volume and not in terms of radioactivity. More precisely, the radioactivity of each of the constituent radionuclides should be carefully estimated with actual measurements and recorded for posterity, for they will be inheriting this radioactive legacy for good or for ill.

<p>Recommendation: that CNSC require CNL to publish careful quantitative estimates of each of the individual radionuclides and their radioactivity in every single case.</p>
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