



**Oral Presentation**

**Exposé oral**

**Supplementary submission from  
Philip Kienholz**

**Mémoire supplémentaire de  
Philip Kienholz**

In the Matter of the

À l'égard de

**BWXT Nuclear Energy Canada Inc.,  
Toronto and Peterborough Facilities**

**BWXT Nuclear Energy Canada Inc.,  
installations de Toronto et Peterborough**

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Application for the renewal of the licence for  
Toronto and Peterborough facilities

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Demande de renouvellement du permis pour les  
installations de Toronto et Peterborough

**Commission Public Hearing**

**Audience publique de la Commission**

**March 2 to 6, 2020**

**Du 2 au 6 mars 2020**

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laissée en blanc*

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**From:** Philip Kienholz  
**Sent:** February 1, 2020 4:48 AM  
**To:** Keith Riel; Henry Clarke; Dean Pappas; Stephen Wright; Lesley Parnell; Diane Therrien; Andrew Beamer; Don Vassiliadis; Gary Baldwin; Kemi Akapo; Interventions (CNSC/CCSN); dginlan@bwxt.com; info@peterboroughpublichealth.ca; diane\_lloyd@kprdsb.ca; sarah\_bobka@kprdsb.ca; rose\_kitney@kprdsb.ca; steve\_russell@kprdsb.ca  
**Subject:** Beryllium in Soil around BWXT Site  
**Attachments:** Trent Profs.pdf; Facts About Beryllium.pdf;

Hello:

In response to the neighbourhood “Trent Profs” — all PhDs — letter to the *Peterborough Examiner*, appended below, regarding steadily increasing Beryllium (Be) in soil readings that are shown on the web site, “Independent Environmental Monitoring Program: BWXT Nuclear Energy Canada Inc. - Peterborough,” (1) I did my own summary of the data from 2014, 2018, and 2019 -- which duplicated the Prof's results, with the Be **percentage increases** between 2014 and 2019 for the locations indicated on the web site map, from greatest to least:

- 134% for the area immediately west of Prince of Wales School — possibly actually the school playground as the neighbourhood Profs suggest.
- 82.8% at Hunter and George Streets.
- 66.2% at R.A. Morrow Memorial Park.
- 33.0% at Monaghan and McDonnel Streets.
- 30.0% at Del Crary Park
- 21.8 % at High and Chamberlain Streets.

Only the test sample site at Sherbrook Street and Medical Drive showed a 0% change, although there was first an increase then a decrease of approximately 15%.

Attached is a “Facts About Beryllium, BWXT and Children” fact sheet.

I note with interest that the soil sample test results were released by the CNSC 22 January 2020, that the BWXT licence application was submitted 19 December 2019 with the CNSC staff report on the licence application issued a day later on 20 December 2019. BWXT had originally requested a licence renewal on 9 November 2018. Apart from the one-year period of private centralization of regulation between the applicant and the regulator prior to any public access to the process, the negligence of failing to take note of the Be soil sample results is dismaying. It is one more indicator of the regulator's internal inability to properly address public safety. The consistent Be increase across the BWXT site's surrounding area, and the more than doubling of Be soil levels at the Prince of Wales School, significant as they are, irregardless of any “Guideline/Reference Level,” were nevertheless omitted from public knowledge. The Be soil levels required citizen data analysis to flag the

increasing Be hazard. One can reasonably hypothesize a “siloeing” of information flow within the CNSC, and a likely insensitivity to information from environmental sampling data per se, as only of interest to public health, and not to industrial continuity.

Additionally an experienced science teacher, and member of Citizens Against Radioactive Neighbourhoods (CARN), has noted the following:

"The Beryllium data supports the following:

- **The beryllium in the soil is likely coming from the air.**
- There is **some evidence** to indicate that the increases in soil beryllium levels would have to be caused by airborne Be that is **above guideline levels** in order to cause these increases.
- There are consistent increases in almost all of the Be sample results. The average increase across the sites is approximately 50% between 2014 and 2019 (5 years). The Be levels in soil do not exceed the guidelines but the increase should have mandated an investigation by CNSC.
- **The largest increase is seen in the playground of Prince of Wales School.**
- Soil sampling occurred in 2014, 2018 and 2019. This odd frequency may suggest that the CNSC was concern about the data in 2018. However, this odd frequency of sampling is found in other IEMP data for other locations (Blind River and Port Hope for example)."

Further, please take note of this passage from the International Atomic Energy Agency (IAEA) that touches on safety around nuclear operations:(2)

“6.8. Information on the existing and projected population distribution in the region, including resident populations and (to the extent possible) transient populations, shall be collected and kept up to date over the lifetime of the nuclear installation. Special attention shall be paid to vulnerable populations and residential institutions (e.g. schools, hospitals, nursing homes and prisons) when evaluating the potential impact of radiation releases and considering the feasibility of implementing protective actions.”

Canada’s obligations to "achieve conformity with measures of control and international obligations to which Canada has agreed..." is given in Section 9 of the 2017 *Nuclear Safety and Control Act*.

There are serious questions that require specific answers:

- Why do BWXT’s self monitored results completely contradict these soil sample results?
- Why did CNSC staff recommend that the license be approved when these data point to so many potentially serious issues?
- Has the CNSC calculated the levels of airborne beryllium that are required to increase these soil sample results so substantially?
- Why did the CNSC not raise the alarm first? Was the Medical Officer of Health informed by the CNSC?

- Has the school board been informed by the CNSC? The school children's parents? Residents around the plant?
- Will BeLPT's (see attached fact sheet) be administered to area residents and children?
- Why is BWXT's most dangerous emission coming from 3 stacks located so close to the elementary school and so close to a public thoroughfare?

Sincerely:

Philip Kienholz, Peterborough

28 January 2020

Dear Editor,

We are a group of scientists who reside in the neighborhoods around BWXT, and we would like to draw your attention to the results of the Independent Environmental Monitoring Program conducted by the Canadian Nuclear Safety Commission and published on their website on January 22, 2020.

We are concerned because concentrations of the heavy metal beryllium (Be), which is used in the BWXT production process, have steadily and significantly increased in soil samples taken in the vicinity of BWXT since recording began in 2014. The clear increase of Be in soil samples is likely being driven by significant increases in air concentrations, which is particularly worrying because beryllium can be toxic if inhaled. More worryingly, the highest values of beryllium in 2019 were found in the samples in the Prince of Wales school playground. Although none of these samples have reached the threshold at which intervention is mandated, the increase alone mandates intervention and further evaluation to ascertain the source.

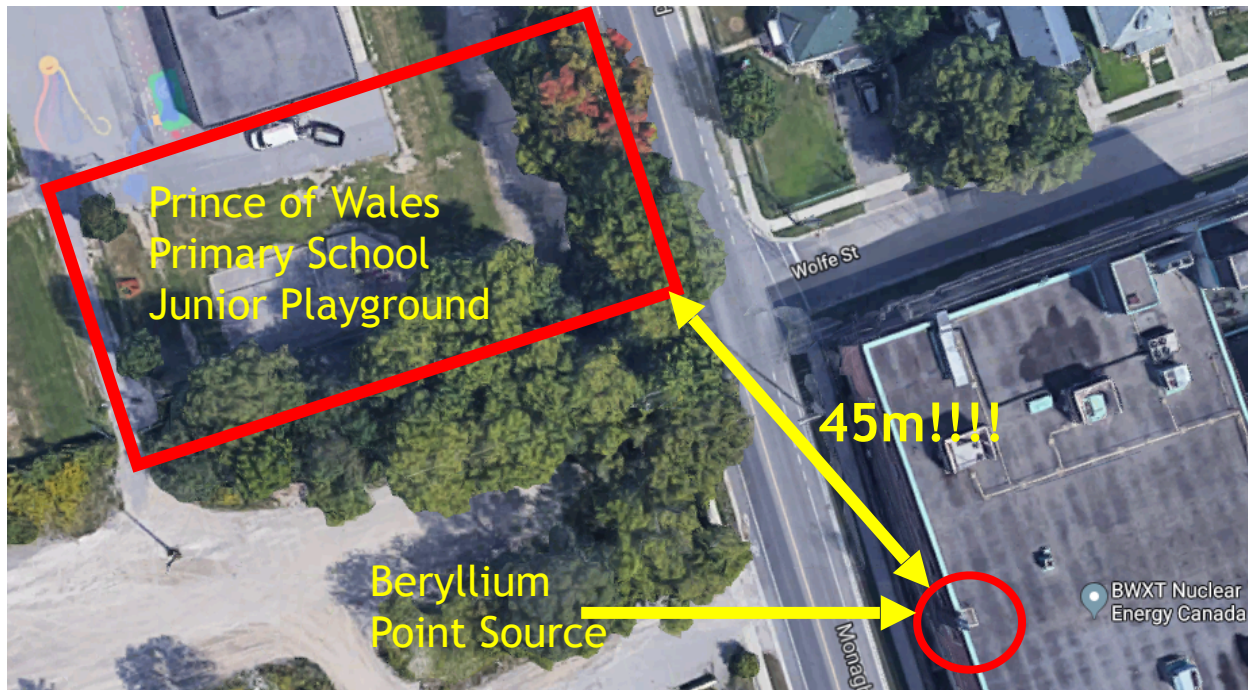
BWXT responsibly monitors the outputs of the production process to detect pollutants such as beryllium and has indicated that their outputs are at or near zero. This statement is inconsistent with the publicly available results of CNSC's environmental monitoring program that shows, clearly and unambiguously, that beryllium concentrations are increasing.

Given the accumulation of Be in soils, it seems inappropriate to discuss an unrestricted licence renewal (or extension) before establishing the source of this contaminant. The only reasonable course of action is to request that, prior to any licensing agreement, the cause of this increase in Be be identified so that it can be stopped.

Yours sincerely,

Julian Aherne, PhD  
James Conolly, PhD  
Gary Burness, PhD  
Peter Lafleur, PhD  
Erica Nol, PhD  
Mark Parnis, PhD

# Facts About Beryllium, BWXT and Children



BWXT has 3 stacks that release Beryllium into the local environment. They are located immediately adjacent to Prince of Wales Junior Playground.

- BWXT uses beryllium in its Candu reactor fuel bundle manufacturing process at the Peterborough location
- Beryllium (*Be*) is classified as a type 1 carcinogen, which means that it is a known carcinogen in humans
- *Be* exposure is known to cause chronic beryllium disease (CBD), an irreversible and sometimes fatal disease.
- *Be* sensitization causes an immune response in humans. While there are no known side effects of this sensitization, it is the basis of a simple test that detects exposure to *Be* by measuring the presence of antibodies. BWXT currently tests its employees for *Be* exposure but not members of the public.
- The name of the test is BeLPT - the Beryllium Lymphocyte Proliferation Test
- *Be* sensitization is an indication of CBD but not all subjects with a positive BeLPT test have CBD.
- In 2017 standards for *Be* exposure were decreased by 40 times to reflect new knowledge of *Be*'s toxicity. Standards have been trending downward for many years. What was a safe level 20 years ago is not considered to be safe now. *Be*'s toxicity is still not well understood and it would be reasonable to expect that standards will continue to become more stringent in the future.
- The European Union for Nuclear Research (CERN) recognizes that beryllium is "the most dangerous of the industrial metals"

- Ontario's MOE has set permissible levels of Beryllium in air as .05 µg per cubic metre of air. This is an approximate equivalent weight of one 80 millionth of a standard sheet of printer paper divided in a cubic meter of air! *Be* is very very toxic!
- There have been NO studies on the effects of Beryllium in children. Consequently, safety levels for kids are assumed safety levels
- Why is BWXT's Beryllium point source so close to Prince of Wales School? **That's a good question!**

<https://www.ontario.ca/page/ontarios-ambient-air-quality-criteria-sorted-contaminant-name>