Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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Written Submission from Jake Wadland

Mémoire de Jake Wadland

In the matter of the

À l'égard de la

Mid-term update from BWXT Nuclear Energy Canada Inc. on licensed activities at its Toronto and Peterborough facilities

Mise à jour de mi-parcours sur les activités autorisées de BWXT Nuclear Energy Canada Inc. à ses installations de Toronto et de Peterborough

Commission Meeting

Réunion de la Commission

May 2026

Mai 2026

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Canada

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April 15, 2026

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Ottawa, ON K1P 5S9
Via email: interventions@cnsc-ccsn.gc.ca

Re: Intervention in CNSC's mid-term license review of BWXT Nuclear Energy Canada's Peterborough facility

To the Commission:

1. Purpose of this submission.

(a) I am writing to express my continued dissatisfaction with the public health risk mitigation at BWXT Nuclear Energy Canada's Peterborough fuel bundle assembly plant (hereafter and variously, "the BWXT facility" etc.).

I request that the CNSC increase risk mitigation at this facility commensurate with the plant's sensitive location in a residential neighbourhood, adjacent to a public school. Specifically I request an ongoing, systematic, independent ambient air monitoring program to mitigate residual risks of toxic emissions from the plant.

This program should run continuously, with a schedule and sampling methodology that is consistent with Canadian and international best practices for environmental monitoring — such as a year-round one-in-six-day sampling rotation, using appropriate high-volume air sampling technology at multiple points around the exterior of the BWXT facility.

(b) I am also writing to document my unsatisfactory interactions with the CNSC, in the process of advocating for my community between 2022 and present.

These interactions were entirely in relation to the operations of the CNSC's licensee BWXT NEC Peterborough during the period of its current license, and are therefore pertinent to the facility's mid-term license review. In my view these interactions suggest an ongoing failure by the CNSC to exercise its stated mandate and values.

This submission may be treated both as an intervention in the CNSC's mid-term review of the BWXT facility's operating license, and as a formal complaint against the CNSC itself.

2. About me. My family and I live about 350 meters from the BWXT facility. I work in the field of climate and energy policy. In the past I worked in international public health, including on interventions to remediate environmental contamination. This submission represents only my personal views and is unrelated in any way to my professional activities.

I support the safe and responsible development of nuclear power generation as a non-emitting energy source that can drive the electrification of the economy and the reduction of greenhouse gas emissions. I am proud of the significant contribution of Peterborough workers to Ontatrio's nuclear fuel supply chain over many decades, and appreciate the economic benefits that their work brings to the community.

In 2022 and 2023 I was a member of the BWXT NEC Peterborough Community Liaison Committee (CLC). I worked alongside other CLC members, including Trent University environmental science professor and environmental monitoring expert Dr. Julian Aherne, to advocate with the CNSC — unsuccessfully — for improved public health risk mitigation at the BWXT facility.

3. Review of relevant facts about BWXT NEC Peterborough's operations. The BWXT facility routinely vaporizes beryllium in the process of assembling CANDU nuclear fuel bundles, and vents filtered emissions from this industrial process into the ambient air of my residential neighbourhood. The BWXT facility is located about 30 meters from Prince of Wales Public School, which has a current enrollment of approximately 600 students from junior kindergarten to grade eight.

Ontario's Ambient Air Quality Criteria for beryllium and its compounds specify a limit of 0.01 $\mu g/m^3$ in a 24-hour period. This extremely low tolerance reflects the significant health risks of exposure to beryllium. These risks can include acute beryllium poisoning, berylliosis, and cancer.

BWXT has reported that it uses 20 kg of beryllium per year in its Peterborough operations, a quantity that is consistent with elevated public health risks.

In 2017 BWXT disclosed that, through human error, staff at its Peterborough facility were systematically exposed to levels of beryllium that exceeded occupational exposure limits. This failure of BWXT's internal systems persisted for 20 months before it was discovered.

4. Existing public health risk mitigation at BWXT NEC Peterborough is inadequate. Existing risk mitigation measures include exhaust stack monitoring managed by BWXT, and periodic soil sampling in the vicinity of the plant by the CNSC's Independent Environmental Monitoring Program (IEMP). The IEMP also reportedly takes an eight-hour air sample around the facility once every three years, monitoring that is so superficial and inconsistent with environmental monitoring best practices as to not even merit mention as a risk mitigator.

In my view the existing public health risk mitigation measures at the plant are insufficient given that:

- The facility works with vaporized beryllium at a scale that could pose significant risks to human health through undetected acute and/or chronic exposure.
- The facility is located in a residential neighbourhood and adjacent to a public school.
- The facility has a history of serious system failures in protecting its own workers from unsafe exposure to beryllium — failures which remained undetected over an extended period of time. The facility should be subject to increased redundancy in emissions monitoring, in order to operate safely in a residential neighbourhood.
- **IEMP soil monitoring is an insufficient supplement to BWXT's exhaust stack monitoring.** At best, reliance on soil sampling for the detection of beryllium emissions allows for too long an interval between emission and possible detection.

  Soil sampling as a proxy for airborne beryllium emissions is an imprecise approach that is incompatible with the risks it seeks to mitigate.

  Soil sampling measures soil beryllium concentration. It doesn't indicate the concentration of respirable particles currently in the air.

  Soil sampling also has poor temporal resolution. It combines the impact of both current and legacy emissions, and complicates distinguishing accidental emissions spikes from steady, low-level emissions.

  The IEMP's Peterborough soil sampling program has further been confounded by methodological inconsistency and error.

5. Ambient air monitoring is a better approach to public health risk mitigation. As a member of the Peterborough CLC, I advocated with the CNSC for ongoing, systematic, and independent ambient air monitoring around the BWXT facility.

I argued that ongoing air monitoring is an essential complementary risk-mitigation measure necessitated by the fact that the BWXT facility is sited in a residential neighbourhood and adjacent to a public school.

This advocacy culminated in a CNSC study, published in September 2023 under the title "Extended Ambient Air Sampling for Beryllium in Peterborough."

In the study, the CNSC conducted ambient air sampling around the BWXT facility during three periods of up to 72 hours each between July and September 2023. Notably, nothing in the study indicates that the CNSC team attempted to determine whether the BWXT facility was actively working with beryllium at any point during the study timeframe — this being the primary source of risk that the study intended to measure. All air samples showed levels of beryllium below the provincial regulatory threshold.

The CNSC concluded in the study that "that there is no risk to the environment or to human health from beryllium in locations surrounding the BWXT-NEC Peterborough facility." The study recommended continuation of the IEMP's existing measures: its soil sampling program, and eight hours of air sampling every three years.

In my view the CNSC's conclusions are a transparently unsound and unscientific overreach. There is no basis on which to generalize from what is effectively a limited pilot study, to support a categorical conclusion about risks to human health around the BWXT facility.

There is still no long-term empirical data about airborne beryllium concentrations around the BWXT facility. The Commission's views are apparently based on this small-scale 2023 study, its superficial IEMP air sampling, and the purely hypothetical beryllium air concentration modelling referenced in its 2020 licensing decision. This body of evidence is an insufficient basis on which to draw conclusions about risks to human health from the BWXT facility.

Given the CNSC's high institutional capacity and the expertise of its staff, it seems unlikely that its unsound conclusions in the 2023 study resulted from incompetence. One is therefore left to speculate about the causes: for example, was the study just a clumsy attempt to quash legitimate community resistance to the inadequate risk mitigation that the Commission has mandated for the BWXT facility?

6. Representation of CNSC air sampling study to Peterborough Board of Health. In January 2024, CNSC representatives presented the results of their 2023 air sampling study at a meeting of the Peterborough Board of Health (now Lakelands Public Health), including their conclusions that the BWXT facility does not pose risks to community health.

Though the CNSC study was prompted by advocacy from the Peterborough CLC, and Dr. Julian Aherne was actively involved in the study design and execution, neither Dr. Aherne nor other CLC members were informed of the CNSC's Health Board presentation or given an opportunity to offer their perspectives before the Board.

At minimum, CLC members should have been informed in advance about the CNSC's Health Board presentation, consistent with provisions of the CNSC's *REGDOC-3.2.1, Public Information and Disclosure*[1]. Given the context of the CNSC air monitoring study, which was produced following sustained community advocacy and with the participation of a community-based expert, it would be reasonable to expect that community members would be given the opportunity to express dissenting views about the study before an important public body, consistent with the CNSC's own Values and Ethics Code.

At the Board of Health meeting, the CNSC represented Dr. Aherne's participation in the study as evidence of both independent expert and community participation, and in a way that I believe would give an uninformed audience the misleading impression that Dr. Aherne endorsed the study and its findings. This despite the fact that Dr. Aherne had previously expressed significant

[1] Though this regulation is technically incumbent on CNSC licensees, it is explicitly derived from the CNSC's own governing legislation and it would therefore be reasonable to expect that the Commission should also adhere to the regulation's provisions.

reservations about the study's methodology and conclusions at a CLC meeting that was attended by a CNSC representative, and where I was also present.

In subsequent email exchanges with me, a CNSC director refuted my concerns about the Health Board presentation by attempting to downplay Dr. Aherne's involvement in the CNSC air monitoring study and equivocating on the study's conclusions.

I am concerned that the CNSC's presentation to the Board of Health may have had the effect of discouraging the Board from exercising its mandate to protect the public health of my community, on the basis of the CNSC's flawed air monitoring study.

I am also concerned that the CNSC may have continued to present its flawed study as evidence for the safety of the BWXT facility's operations, before other public bodies charged with the protection of public health in my community.

Considering the CNSC air monitoring study alongside this and previous interactions, I am increasingly concerned that the CNSC is acting in bad faith and without a sincere commitment to fulfilling its mandate of "strengthening confidence through open communication and engagement to build and foster trusted relationships" with my community.

I believe that the CNSC's actions contradict the provisions of its Values and Ethics Code that pertain to treating stakeholders with dignity and fairness, acting with integrity and honesty, and employing evidence-based decision-making, as well as its commitment to "engaging in honest, authentic – and respectful – conversation, raising pertinent issues, [and] seeking out divergent and dissenting views".

7. Ongoing ambient air monitoring is both an essential and a feasible addition to risk mitigation at the BWXT Peterborough facility. I surveyed professional environmental monitoring firms in 2021 and found that a year-round, rotating one-in-six-day ambient air monitoring program for beryllium and uranium at four sites around the BWXT plant, consistent with the protocols of the Ontario government and the Canadian Council of Ministers of the Environment, would cost between $273,000 and $400,000 per year.

In context, this represents less than 0.03% of the $1.4 billion annual operating cost of Darlington Nuclear Generating Station, which receives fuel bundles assembled at BWXT NEC Peterborough. In any cost-benefit analysis, how can such a negligible relative cost not be justified under the Commission's binding requirement to ensure that toxic emissions from its licensees are as low as reasonably achievable (the ALARA principle)?

It seems likely that the CNSC could implement systematic air monitoring through its IEMP more cheaply than private firms — perhaps for less than the cost in staff time required to resist perennial advocacy by the community on this subject. By comparison with the extraordinary complexity of the CNSC's core mission and the expertise of its staff, ambient air monitoring can only be trivial to engineer and execute. It is implausible to suggest that the IEMP could not design and operate a world-class ambient air monitoring program around the BWXT Peterborough facility at negligible relative cost. It appears that the only thing lacking is the willingness to do so.

The apparent obstinacy of the CNSC in the face of reasoned argumentation over many years by community members with professional expertise in the fields of public health and environmental monitoring has led me towards the unavoidable conclusion that the CNSC's community engagement is performative and insincere, and inconsistent with its own mandate and values.

Risk management in any sphere of activity is based fundamentally on the probability of risk outcomes, their potential severity, and the ease of mitigation. I am concerned that the Commission overweights the probability dimension, underweights uncertainty about risk outcomes that are either unknown or presently unknowable, and underweights the severity of potential risk outcomes — relative to the weightings that would be reasonably be assigned to these variables by the community exposed to risk outcomes.

Given both the relative ease of further mitigating residual risk to public health from the BWXT facility via an appropriately rigorous air monitoring program, and the CNSC's mandate not only to protect health and safety but also to foster community engagement and trust, why would the Commission not be open to compromising with legitimate, evidence-based community concerns? The answer to this question remains unclear to me even after years of advocacy.

8. The BWXT facility in context. In Canada in 2026 it is extraordinary and an affront to common sense that a nuclear fuel processing facility should be located across the street from a public school. Only by unreasonably straining the definition of "reasonably achievable" risk reductions can this facility be justified under the CNSC's binding ALARA principle.

Canada has achieved a world-leading nuclear power industry. It beggars belief to suggest that the industry could not reasonably achieve the displacement of a nuclear fuel assembly facility to an unpopulated area, thereby reducing human health risk asymptotically to zero. At a time when Canada and the province of Ontario are investing tens of billions of dollars in the development of the nuclear power industry, the cost of relocating this facility could scarcely equate to a rounding error on the industry's notional balance sheet.

Yet the Commission nonetheless chose in its 2020 licensing decision to prolong the operating license of this legacy facility, in the face of widespread community opposition.

The history of the BWXT facility is outside the scope of the present mid-term license review, and indeed precedes the establishment of the CNSC. But its history remains very much in-scope for my community, and continues to inform our perception of risk.

For decades, under the management of BWXT's predecessor, workers at this facility were routinely exposed to unsafe levels of beryllium and uranium oxide, as documented exhaustively in a 2017 retrospective exposure study commissioned by UNIFOR. In 1965, an inspector from the provincial Ministry of Labour observed workers at the facility hand-sawing beryllium blocks, and recorded beryllium concentration in air of 41.5 $\mu g/m^3$ — more than 40,000 times the Ontario government's present-day limit. The inspector's recommended safety improvements were reportedly ignored, without further follow-up.

For my community, the legacy of this facility and the surrounding industrial complex is one of preventable illness, suffering, and death, as a direct consequence of regulatory negligence.

BWXT's own safety failures as operator of the facility demonstrate that human fallibility will always persist as an irreducible residual risk.

For the CNSC to come into my community and unilaterally dictate the level of risk that we should be prepared to accept, upheld through bad-faith application of its own principles, is to me evidence of hubris and arrogance, notwithstanding the rights afforded to the Commission by federal law.

If the Commission decrees that my community must continue to bear risk so that Ontarians can enjoy the enormous benefits of reliable and affordable electricity, then let that risk be mitigated to the maximum possible extent. To do otherwise is an outrage to the memory of my community's past suffering, and a promise that it may be repeated in future.

Sincerely,

Jake Wadland
Peterborough, Ontario