



**Written submission from  
Timothy Wilson**

**Mémoire de  
Timothy Wilson**

In the Matter of the

À l'égard de

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

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**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

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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Dear CNSC -

Thank you for providing me with the opportunity to provide this written submission. I am not applying to intervene in person.

My name is Timothy Wilson. I live at [REDACTED], in downtown Peterborough. I moved to Peterborough in the year 2000. Before that, I lived for twelve years in Seaton Village, Toronto, within a few miles of BWXT's (then GE-Hitachi's) operation on Lansdowne Street.

I have been self-employed for over two decades as a researcher and writer. Though I am not a scientist, much of my research and writing has been related to medical and scientific matters. I have also worked (and continue to work) as a journalist.

I am writing specifically to call your attention to a number of concerns with regard to how BWXT has communicated its plans to expand pelleting in Peterborough, and also to point out to you some serious flaws in the language used in BWXT's licence application, and the lack of rigour in the licence requirements with regard to preparation for pelleting. By not speaking directly to its intentions, BWXT has given itself an "out" in the application itself, where, had the company been more forthcoming, more detailed information might be required. Consequently, my specific request is that the portion of BWXT's license renewal that would allow the "flexibility" to conduct pelleting in Peterborough be denied, despite the fact that CNSC staff have recommended approval.

The over-arching problem has been the communication from BWXT. This has created some serious issues in our community, and – in my view – has made it less likely for the public to come to an informed decision on the matter, and to trust the company. I believe that this, in turn, has made your job as commissioners more difficult because a) the public has been misinformed, giving you only partial visibility to the real nature and extent of BWXT's social licence in Peterborough; and b) now that some of the public has determined the truth on its own, you are at present subject to an avalanche of interventions and submissions from worried citizens.

This is not how the process should work. The problem can be laid directly at BWXT's feet and – to the extent that the CNSC enables such irresponsible corporate behaviour – at the feet of the Commission itself.

The primary communication problem comes from a sleight of hand in the application itself. As you are aware, BWXT makes no claim as to its specific intentions to move pelleting to Peterborough, saying only that it wants the "flexibility" to do this. This has been a consistent message on BWXT's part to the Peterborough media.<sup>1</sup>

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<sup>1</sup> Kovach, Joelle, *Uranium pellet manufacturing safe: BWXT* (Peterborough Examiner, October 08, 2019) ['Cutler added that there are no plans to start manufacturing pellets in Peterborough even if the licence is granted']. Clysdale, Taylor, *Uranium processing safe for Peterborough neighbourhoods: BWXT* (MyKawartha.com, December 06, 2019) ["There's currently no plan to change our operations." (Quote from Natalie Cutler, BWXT)]. Kovach, Joelle, *Peterborough nuclear energy firm BWXT seeks licence change* (Peterborough Examiner, January 10, 2019)

The result of this approach has been effectively to stymie public discourse with regard to the impact that pelleting might have on our community. Because “there are no plans”, there is in effect nothing to discuss.

However, as the CNSC is well aware, BWXT’s language with regard to “flexibility” originates in the licence application itself. BWXT claims that, as a business working within ten-year mandates, it is reasonable for them to be given this consideration given possible market fluctuations.

That is understandable, but BWXT is requesting a change to a Class 1B Nuclear Fuel Facility Operating Licence (FFOL), which for obvious reasons requires a much higher level of accountability and transparency than would a typical manufacturer. Yet in its licence application, BWXT devotes a total only three paragraphs to pelleting in Peterborough.

The reasons given for such a cursory treatment include that emissions are expected to be within licenced limits with “little or no change”, and that the licence allowance for possession of up to 1500 megagrams (Mg) of Uranium is also not expected to change. If pelleting does occur, BWXT will rely on “the approved change management program and prior notification requirements within the LCH”. As well, any program documents and assessment reports affected by the project “would be revised at that time and those subject to prior notification would be submitted to CNSC staff as required”.

By presenting the proposed allowance for pelleting in such general terms, BWXT gives the CNSC, and by extension the general public, the impression that the possible changes will be of minor effect, and can therefore be conducted within the present licence. This is, to say the least, disingenuous.

There are multiple specific reasons why this approach by BWXT has been problematic, and should therefore nullify its right to have the “flexibility” to pellet in Peterborough. Some of these are:

+1 In its application, BWXT states that any pelleting at the Peterborough facility “would be conducted within the existing licenced facility via a re-configuration of existing space.” Given the public’s concern with regard to the possibility of pelleting being done in close proximity to a public school playground, the reluctance to identify the location represents bad faith. As the CNSC knows, the plan is to conduct pelleting in Building 21, the facility closest to the school, as is made clear in the company’s own *Environmental Risk Assessment Report: Peterborough Consolidated Operations* (November, 2018). The criticism here extends to CNSC as a “captured” regulator, in that both the company and the regulator know that the plans are to use Building 21, yet the public has not been told this: not during either of BWXT’s public information sessions, nor in any correspondence from BWXT or the CNSC.

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[“there are no plans to change operations”]. Clysdale, Taylor, Nuclear regulator staff supports uranium pelleting at former Peterborough GE site (MyKawartha.com, December 24, 2019) [“BWXT says it has no plans to introduce pelleting to Peterborough”].

+2 As a result of avoiding an open discussion with regard to pelleting in Building 21, the public has been left completely in the dark with regard to the modifications required for Building 21 to accommodate pelleting. The licence application does not address this, though again we know from BWXT's *Environmental Risk Assessment Report: Peterborough Consolidated Operations* that BWXT has completed a conceptual design.

+3 BWXT claims in its application that "Strong community engagement has been developed and maintained for BWXT NEC's operations within Toronto and Peterborough." This is false, at least with regard to Peterborough. The two BWXT events – a BBQ in a parking lot and a public information forum at the Evinrude Centre – were poorly attended (CNSC representatives can attest to this). The reason for the poor attendance, in my view, was related to the "open house" format, which did not permit a general public discussion with questions and answers. A request by CARN, the local group opposed to the expansion, to alter the format of the event at the Evinrude Centre, was denied. By comparison, a public information event organized by CARN at Prince of Wales School had over 200 attendees with an open format that allowed for questions and answers.

+ 4. In its licence application, BWXT claims that it is "committed to connecting with the communities in which it operates in a timely, transparent and meaningful way." This is false. In 2018 BWXT gave \$1,000 to Prince of Wales School, and in 2019 BWXT gave \$1,500 to the school. The money was supposed to go to STEM programs, but was shrouded in secrecy until direct requests for information were made. Apparently, the \$1,000 given in 2018 went to the purchase of Sphero's, Osmos, and Lego robots – this information was provided by the school board early in 2020, after a request for information was placed in July, 2019. The \$1,500 given in 2019 was not spent, and was returned to BWXT after the Area Supervisor for the Kawartha Pine Ridge District School Board (KPRDSB), Joseph Tompkins, was made aware of the donations (also in July, 2019) and of the fact that the Board's Administrative Regulations had not been followed. Though one doesn't expect BWXT to be an expert on Board policy, the donations lacked transparency – essentially the money was just handed to the school, contrary to policy, with no follow-up. This exposed the industry to the perception that BWXT was attempting to purchase social licence by giving money to a public school in an underserved neighbourhood. The problem was compounded when, after the 2019 donation, BWXT was given a platform in the school newsletter to promote its BBQ, including prominent representation of the company logo. Upon discovering that there was an appearance of a *quid pro quo*, with BWXT purchasing access to the newsletter and mailing list of a cash-strapped public elementary school in an underserved neighbourhood, Joseph Tompkins determined that "the School Newsletter will not be used to communicate any BWXT community events in the future".

+ 5. The licence application includes detailed sections on training, yet nowhere is there any explanation of how a SAT-based training system that is specific to pelleting would be rolled out in Peterborough. The public is expected to accept that BWXT, under the watchful eye of the CNSC, will arrange this at some future date under the expanded

licence. It is unacceptable that the application process provides no indication of what this training process might look like in the context of new pelleting operations in Building 21.

+6. The CNSC is being asked to approve a licence that allows for the initiation of pelleting in Peterborough without a Peterborough Facility Safety Analysis (FSA) that is specific to those operations. In effect, if the license is granted as it stands in the application, it appears that BWXT will be able to assume pelleting without an FSA that addresses the new activity. Or, should a new FSA occur, it will presumably be conducted under the aegis of the renewed licence – the public, however, has received no assurances to that effect in the licence application.

+7. The licence application offers no specifics on how the “ALARA” (As Low As Reasonably Achievable) principle will apply to the expansion of pelleting to Peterborough. As in other examples, one assumes that the ALARA principle will be ported over from the practices in the Toronto facility. This is inadequate, as pelleting is a completely new process in Peterborough, and the applicant should be required to indicate how ALARA might apply to operations in Building 21.

+8. In its application BWXT acknowledges that a “major potential worker hazard is inhalation of airborne UO<sub>2</sub> particles”. As the commissioners know, this is more of an issue with pelleting than with bundling. As stated previously, the alterations required to Building 21 to ensure a low particle environment – both inside and outside – are simply not addressed in the application. BWXT writes in its application that “Internal radiation hazards exist at both the Toronto and Peterborough facilities in the form of loose Uranium which may enter the body by inhalation, ingestion or absorption.” Only in the *Environmental Risk Assessment Report: Peterborough Consolidated Operations* is there a suggestion of what is required and proposed in terms of facility upgrades. There is nothing that speaks to this in the licence application itself; instead, all issues are addressed from an operational perspective. A process and operational approach works fine for an application to continue *extant* operations, but is woefully inadequate for a nuclear fuel processing company proposing a dramatic *change* to its Class 1B Nuclear Fuel Facility Operating Licence (FFOL). For example, how would Zone Control be structured in Building 21 with pelleting? The BWXT licence application gives us no clue whatsoever, leaving the public guessing.

+9. The *BWXT Nuclear Energy Canada Inc. Environmental Risk Assessment Report Peterborough Consolidated Operations* itself is a weak and inadequate document, in that it states no less than 13 times that there is no requirement for further assessments. In effect, the Report is a misnomer: for the most part the “risk assessment” is not an assessment at all, as it simply determines that no new assessments are required. Specific to pelleting in Peterborough, the Report states: “No major infrastructure changes are expected as a result of process consolidation” and that “Emissions from the consolidated operations are expected to be comparable to, or lower than emissions from the existing fuel pelleting operation.” The Report further states that, with regard to the new pelleting operations, “As the number of stacks servicing the

consolidated operations have not been finalized, uranium concentrations may differ from historical conditions”. It states, here as elsewhere, that the amounts are “expected” to be lower than in Toronto, and below the present licence limits, even for Peterborough. Throughout the Report, the consultants, Arcadis, simply assume that the emissions from Toronto will port over to Peterborough, with levels that are the same or less for internal exposure, as well as for emissions to air and water. The consultants appear to have done no new work whatsoever, the summation of the report being that despite the dramatic change in operations, the *status quo* holds. How is it possible for a consultancy to come to such conclusions, and for the company and regulator to accept these conclusions, when there is no specific understanding of how pelleting will be conducted in Building 21, including volume, technologies, water/air emission vectors, and workforce compliment?

+10. As part of the licence expansion, BWXT has had no communication with emergency services in the City of Peterborough to determine their views on pelleting, or to ask if the city has any specific requirements with regard to training. Jodi DeNoble Manager, Emergency and Risk Management, City of Peterborough, has stated that “I personally have not received anything to that effect. My assumption would be that if granting a licence there would be some criteria for requirements for emergency response plan, but I have not seen them yet.” Again, this is the problem with the language of “business flexibility” – it potentially allows BWXT to receive a licence without first having to respond with the rigour and accountability expected of a more specific request. The result has been that Peterborough City council, in response to concerns from local citizens – not from the CNSC or BWXT – has passed a motion to have staff report back to councillors about how the city would respond in the event of an emergency involving nuclear materials related to pelleting. But how are city staff supposed to arrive at such a determination, given that the company refuses to discuss how pelleting might be conducted, and its practical implications?

+11. As the CNSC is well aware, the licensee is obligated to maintain a financial guarantee for decommissioning that is acceptable to the Commission. It is also the obligation of the licensee to maintain a preliminary decommissioning plan. However, in this most unusual of licence submissions, in which corporate rights are misaligned with social obligations, the financial requirements of the licensee for decommissioning Peterborough “post-pelleting” are not addressed. How is a company to be given the “flexibility” to pellet, without accounting for the added decommissioning costs that pelleting would entail? As it stands, BWXT is seeking approval of the updated financial guarantee amounts for Peterborough at \$10,775,122, and Toronto at \$37,362,745. However, should BWXT make good on its “flexible” licence, it would transfer all or some pelleting to Peterborough, whereupon the ensuing decommissioning cost of Peterborough would rise to...what? Decommissioning plans are to be reviewed every five years, and with the licensee expected to “maintain a financial guarantee for decommissioning that is acceptable to the Commission”. Given that Toronto’s decommissioning costs are four times Peterborough’s, which presumably represents the cumulative effects of pelleting vs. bundling, it is only logical to assume that decommissioning costs for Peterborough in a post-pelleting environment would rise

substantially. Is the CNSC really planning on approving the “flexibility” to pellet in Peterborough without first assessing future decommissioning costs from pelleting?

+12 The “processing of radioactive waste may result in an accidental release of the radionuclides during characterization, segregation, transportation, treatment, and disposal.”<sup>2</sup> Outside the Toronto pelleting plant, BWXT has recorded a maximum concentration of 13.6 µg of uranium/g of soil. The exposure limit for industrial and commercial land uses is 33 ug/g, and for residential land uses it is 23 ug/g. While the CCME estimates exposure *rates* in Canada for adults, teenagers, school aged children, and toddlers, it does not break down exposure *limits* by these categories. (The effective dose limits for a citizen is 1 mSv per calendar year, presumably inclusive of toddlers, young children, and pregnant women. This jumps for nuclear energy workers to 50 mSv in any one year, and 100 mSv in five consecutive years. The risk for pregnant women is much higher: the dose limit for pregnant workers is 4 mSv for a nine month term.<sup>3</sup>) There is no specific assessment of alpha radiation exposure via ingested uranium dioxide particulate for children in schoolyards, likely because researchers could not have imagined a circumstance wherein heavy transport of uranium dioxide and fuel processing – and more specifically pelleting – would be *deliberately* placed within 25 metres of an elementary school playground. (The World Health Organization does not assess the specific subdermal exposure risk of uranium dioxide in children, instead addressing radon, medical imaging, ultraviolet radiation, and one-off accidents.<sup>4</sup>) The rate at which radioactivity diminishes from uranium dioxide is very slow, remaining essentially unchanged over thousands of years. Given that the effect is cumulative, and that uranium dioxide releases alpha particles, the risk of soil contamination in a nearby playground, and possible ingestion by children, whose cells are dividing rapidly, is worrisome. Nonetheless, uranium dioxide is perceived by the industry to be relatively harmless because, although the alpha particles are energetic and high in ionizing properties, their weight and size means they lose their energy over relatively short distances – even topical (dermal) exposure is low risk. But this is deceptive, because ingestion is another matter altogether:

*If somehow inhaled or ingested, alpha particles can cause highly focused ionization, releasing all their energy just across a few cells and causing severe damage at both cellular and genetic level. This makes alpha particles possibly the most dangerous form of radiation.*<sup>5</sup>

Research has shown that, after exposure to ionizing radiation, young children are much more susceptible to radiation-induced cancers than adults. As a result, the healthcare industry sets distinct exposure standards for medical imaging with regard to children when compared to adults.<sup>6</sup> However, when it comes to possible ingestion of alpha-

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<sup>2</sup> Smičiklas, Ivana; Šljivić-Ivanović, Marija, *Radioactive Contamination of the Soil: Assessments of Pollutants Mobility with Implication to Remediation Strategies* (December 16, 2016).

<sup>3</sup> *Radiation Protection Regulations* (Nuclear Safety and Control Act, May 31, 2000).

<sup>4</sup> *Children's Health and the Environment* (World Health Organization).

<sup>5</sup> Donya, Mohamed; Radford, Mark. *Radiation in medicine: Origins, risks and aspirations*.

<sup>6</sup> *Radiation Protection Guidance for Diagnostic and Interventional X-Ray Procedures* (US EPA, November 2014).



emitting uranium dioxide, the CNSC has no guidelines with regard to the appropriate proximity of an elementary school playground to a pelleting operation, even when facilities such as BWXT's in Toronto have reported proximate soil levels with concentrations as high as 13.6 µg of uranium/g of soil. The logical summation is obvious: if the CNSC is serious with regard to its commitment to ALARA, pelleting in Building 21 in Peterborough is a bad idea.

+13. BWXT and the CNSC claim to be science-based. Decisions are made in an objective fashion, even when political and economic concerns are in play, as in the moving target that is the Pickering shutdown schedule – already past what was once considered the “safe” decommissioning date, with emissions creeping up year-over-year as the plant ages. Commissioners would be deluding themselves if they believed that any community, anywhere in Canada, would accept a company proposal for a greenfields' site for fuel pelleting and bundling, inclusive of the use of beryllium, within 25 metres on an elementary school playground. However, “objective” decision-making changes when business considerations come into play. The only reason this licence application for pelleting is being given any merit at all, given its close proximity to an elementary school playground, is due to the legacy of GE-Hitachi. As the commissioners already know, the larger GE property in Peterborough is so deeply contaminated it is essentially worthless, with remediation – should it ever occur – expected to take over a decade and to cost hundreds of millions of dollars. General Electric, which recently closed shop in Peterborough after 100 years, is having difficulty funding its pension plan, and is in no hurry to assume the responsibility of its brownfields lands in Peterborough. BWXT, which leases the property from GE, is a large US-headquartered corporation that is in a financial position to build a greenfields site far removed from residences and schools. The company's revenue in 2018 was US\$1.8 billion, and it could easily afford to construct a facility in a more appropriate location – the Pickering site itself would be a reasonable option. However, BWXT has no plans to pursue a greenfields option, and the CNSC, judging by its staff recommendations, is not about to make this a requirement, despite the fact that there is no nuclear fuel processing anywhere in the world (with the possible exception of Japan's discredited industry) that exists in such close proximity to an elementary school playground.

## **Conclusion**

The CNSC has a near perfect approval rate for licence applications. A generous view is that the Commission functions like a PhD thesis advisor: once the candidates are in the room, they should be qualified to pass with only minor revisions. A more cynical take would be that the CNSC defers to corporate agendas: once a licence application is filed, the decision has already been made, no matter the content of any interventions or submissions.

CNSC staff have already recommended approval of the licence, based on a series of assumptions that pelleting practices currently in place in Toronto will transfer to

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Peterborough. With new processes and technologies, the belief is that these practices might even be improved upon. This would seem to be a reasonable assumption, given the cramped and antiquated nature of the Toronto facility. (If any commissioners have *not* had tour of the Toronto site, I would highly recommend that they do so in order to make a properly informed decision).

BWXT, both in its licence application as well as in its communication to the public, has repeatedly downplayed the likelihood of pelleting, saying that it is only looking for “flexibility” and that it has “no plans”. Perhaps as a result, the licence application avoids any detailed description of the role of SAT-based training or the status of a Facility Safety Analysis (FSA), the assumption being that BWXT will follow through on best practices if and when the time comes. It is also worth noting that the present licence application does not take into account the increased costs associated with decommissioning Peterborough in a post-pelleting environment. However, with Pickering set to close, the demand for pellets from BWXT will be cut in half, potentially making the aging Toronto plant economically unsustainable. As well, the lands around Toronto are dealing with decades of UO<sub>2</sub> contamination. Given that this effect is cumulative, maintaining compliance from a leaky facility becomes more difficult and costly. In short, this licence application must be assessed with the understanding that BWXT plans to move pelleting to Peterborough. To declare otherwise, as BWXT does both in its licence application and in its communication to the public, is irresponsible – and that is *not* a word we want associated with the nuclear industry in Canada.

The present licence application is therefore duplicitous, and an inadequate basis for an expansion to include pelleting. Permission to conduct pelleting should require a unique assessment of the circumstances in Peterborough. The *BWXT Nuclear Energy Canada Inc. Environmental Risk Assessment Report Peterborough Consolidated Operations* is an unwarranted basis for approval of pelleting in Peterborough, as it provides no new research and information. Apparently BWXT has completed a conceptual design of Building 21; however, this appears to be unavailable to the public. No doubt, the reason given is that the information is “competitive”. A similar excuse is used by BWXT regarding its lack of transparency as to its intentions in Toronto and Peterborough, with Ted Richardson, BWXT’s Director of Fuel Operations, having told me directly that the company did not want to create anxiety with its Toronto workforce.

As it stands, the Toronto neighbourhood’s demographic has been transitioning from that of working-class families surrounded by light industry, to white-collar workers with ever-increasing property values. The pressure from “NIMBYism” (e.g. Not In My Backyard) is on the rise in Toronto – hence the likelihood that BWXT will move to Peterborough, an underserved community where the company already has facilities. However, in my view this circumstance also provides an ideal opportunity for the industry to invest in a greenfields’ site. The problem is that ALARA is something of a misnomer, given that the “licensees must ensure that all doses are as low as reasonably achievable, *social and economic* factors being taken into account.” [Emphasis mine]. Given that the General Electric lands are worthless, and that the buildings were already used by GE-Hitachi and then BWXT for bundling, the company is reluctant to invest in a more appropriate

site with new technology. Certainly, the antiquated nature of the Toronto operations and the increasing soil load in the neighbourhood suggests that a change is in order. The expansion of pelleting in a residential neighbourhood, only 25 metres from an elementary school playground, is unconscionable, potentially exposing society's most vulnerable demographic to long-term health risks.

Among CNSC commissioners, only one is a medical doctor. This is common in the industry, which is heavily represented by experts in material sciences (engineering, physics) and is underrepresented by professionals in the life sciences (medicine, biology). Dr. Demeter's expertise in Nuclear Medicine focusses largely on the legitimate concerns with regard to medical imaging, where considerable research has been done with regard to the heightened risk presented to pregnant women and children. Children grow quickly, and their cells are more sensitive to radiation. The effects of radiation take years to develop: the younger the age at time of exposure, the greater the likelihood of there being deleterious, long-term health effects from ionizing radiation. Unfortunately, there has been limited research into the lifelong effects of alpha-emitting uranium dioxide particles on children. Given the low population base, it will be nearly impossible to assess whether or not children at Prince of Wales School will suffer health consequences due to the release of errant particles of uranium dioxide. What is known is that with pelleting there will be more transportation of uranium dioxide to the Peterborough plant, with higher emissions. As it stands, the 45 gallon drums used to transport uranium dioxide, as was witnessed by me during a recent tour of the Toronto plant, are severely dented due to frequent re-use. A rejection of the pelleting component in Peterborough, and a move to a greenfields site, far from residences and schools, with new technology, would be the best application of ALARA, should the CNSC be committed to this principle, as it claims.

Upon rejection of the pelleting component, BWXT would be in a position to reapply to the CNSC at a future date for inclusion of pelleting in the present licence. This application would provide BWXT, the CNSC, and the public, an opportunity to conduct a well-informed assessment of the specific issues related to pelleting. It would also provide BWXT the time to consider another location better suited to the industry's commitment to ALARA. As it stands, given the nature and scope of the proposed change, the pelleting components of the present BWXT licence application are woefully inadequate, and should be denied.

Respectfully,

Timothy Wilson