Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 20-H2.184A

File / dossier : 6.01.07
Date: 2020-02-18
Edocs: 6241016

Supplementary Information
Oral Presentation

Revised written submission from
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Renseignements supplémentaires
Exposé oral

Mémoire révisé de
Trista Gilbert

In the Matter of the

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

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

Commission Public Hearing

March 2 to 6, 2020

À l'égard de

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

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

Audience publique de la Commission

Du 2 au 6 mars 2020

Canada

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Canadian Nuclear Safety Commission
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February 18, 2020 (revised version)

To whom it may concern:

I am not a scientist or a mathematician. I am not an expert in nuclear energy. I hold degrees in Cultural Studies and English literature—education which brought me to the City of Peterborough in the first place. I have been a waitress in this town, had babies at the Peterborough Regional Health Centre, and I contract-teach for Fleming College.

I am writing to oppose BWXT's request to include processing uranium pellets at its Peterborough, Ontario facility as part of its licensing renewal. I'm writing to oppose the license renewal being granted.

One of the courses I have taught at Fleming is called Academic Writing and Research. It is a program geared towards students who want to move on to university to pursue careers in healthcare or other sciences. Annotated bibliographies are a focus of this course: the ability to effectively research a subject using materials that are relevant, current and credible.
Even our basic Communications course at Fleming, which is a requirement for virtually every program, teaches the importance of credibility: credibility in the workplace, credibility of character, and academic credibility. In fact, we use the "CRAAP test" to determine the credibility of a source—and to get a few laughs (CRAAP Analysis, 2020). This acronym covers currency, relevance, authority, accuracy and the purpose behind any given source. More

specifically, it asks bigger questions, such as why a source exists in the first place and whether there may be biases, prejudices or other agendas. I'm used to shovelling through the sludge pile.

The main argument that I have encountered while showing opposition towards the BWXT application is that uranium is naturally occurring and safe. On BWXT's own website, they refer to "natural uranium pellets" ("Licence Renewal", 2020, para. 3) and invite us to "SEE HOW [THEY] KEEP [THEIR] EMPLOYEES AND NEIGHBOURS SAFE" by linking to pages such as "Licence Renewal" and "COMPLIANCE" ("Safety", 2020). I would like to challenge the ideology of "natural uranium pellets" and safety.

Firstly, the World Nuclear Association defines natural uranium as "a mixture of isotopes" ("Uranium and…", 2016, para. 3). No one is arguing that some uranium isotopes or uranium ore aren't naturally occurring. We aren't discussing merely uranium isotopes or uranium ore. Simplified, uranium ore becomes uranium oxide, which is converted to uranium hexafluoride (gas), which can then undergo "enrichment" to become the uranium dioxide that we *are* discussing ("Uranium and…", 2016, para. 21-24). Important to note is that, "[e]nrichment increases the proportion of the U-235 isotope from its natural level of 0.7% to 3-5%" and that a "by-product…of enrichment is depleted uranium" ("Uranium and…", 2016, para. 23). It is the "uranium dioxide (UO2) which is formed into fuel pellets" ("Uranium and…", 2016, para. 24). So, let's be clear, the forming of fuel pellets is an engineered *process* which is not naturally occurring.

Secondly, when the Canadian Nuclear Safety Commission (CNSC) lists Radiation Protection Regulations they mandate that "[e]very licensee shall implement a radiation

protection program and shall…keep the amount of exposure to radon progeny and the effective dose and equivalent dose received by and committed to persons as low as is reasonably achievable" ("Radiation Protection…" 2017, Section 4). Notice there is no use of the word "safe". The Canadian Nuclear Safety Commission allows for a certain amount of risk within the *processing* of uranium and within the manufacturing of uranium products. As-low-as-reasonably-achievable (ALARA) does not equal absence of potential harm. It does not equal a certainty of health and wellness. I'm not here to argue whether or not BWXT, or any industry, is or is not complying. I'm here to stress that these kinds of processes and their accompanying risks and hazards do not belong in the middle of a city, and certainly not in close proximity to our children.

The property of BWXT Peterborough, formerly GE, has a rich history of toxicity, from asbestos, to heavy metals, to PCBs and other chemicals as well as uranium ("Lethal Legacy", 2016). PCBs continue to flow from the factory after heavy rains, workplace incidents (Davis, 2018), and with the spring thaw which often floods the factory floors, spilling contaminants into the sewers and on into Little Lake (J. Dufresne, personal communication, January 17, 2020). We have to stop adding toxicity on top of toxicity.

According to their own 2018 Annual Compliance Monitoring Report, BWXT released 46.2 grams of uranium into the air from 2014-2018 at their Toronto facility as opposed to only 0.014 grams in Peterborough over the same time period ("2018 Annual Compliance…", 2019, Figures 10 & 11). It is clear from the numbers that processing uranium pellets increases the presence of uranium in the air. Now, I've let mathematician and physicist Dr. Gordon Edwards of the Canadian Coalition for Nuclear Responsibility do the math for me, but each gram of

uranium oxide contains 7 trillion particles of size 0.3 microns ("Say NO…", 2019). In the video clip, "Say NO to BWXT Uranium Pelleting", Dr. Edwards clarifies a CNSC quote and insists that "inhalation of uranium dust [WILL] result in internal dose to lung tissue from the alpha particles" ("Say NO…", 2019). Furthermore, Dr Edwards explains at 6 minutes, 15 seconds into the clip what damage a single particle of uranium does when lodged in lung tissue. Dr. Cathy Vakil of the Canadian Association of Physicians for the Environment, in the same video, explains that a particle of uranium within the body causes cell damage and if the nucleus is damaged—the DNA—you are at risk for cancer ("Say NO…", 2019). It is a dangerous game of dice.

According to the Summary of Selected Cancers: Peterborough County and City, a study done in 2012, Peterborough has some disturbing statistics. The report reads that, "[r]elative to Ontario, Peterborough males had significantly higher incidence rates of lung cancer (6.5%) and melanoma (24.4%)" while "Peterborough women experienced significantly higher rates of lung cancer (21.9%), melanoma (21.5%), and uterine cancers (14.7%) (Kurc, 2012, p. 5). Perhaps even more alarming is that "[l]ung cancer mortality rates were significantly higher in Peterborough men (6.6%) and women (14.9%) relative to Ontario (Kurc, 2012, p. 5). While we cannot exclude factors contributing to cancer such as smoking, nutrition and physical activity, we need to ask, is it possible that facilities such as BWXT (and historically, GE) are contributing to this elevated number in the Peterborough area? Could the reason that more of us are dying from lung cancer be correlated to exposure to alpha particles resulting in DNA damage and ultimately, cancer? Or could the increasing amounts of beryllium in our soil samples (which I will highlight shortly) be a contributing factor? With today's regulations and safety precautions, we should be seeing constant improvement, not increased risk.

According to Section 3.7.1.1 of BWXT's 2018 Annual Compliance Monitoring Report, Peterborough's site failed its ALARA goal for a "3% reduction in collective whole body dose" of radiation ("2018 Annual…, 2018, p. 23). Instead, 2018 saw a 6% increase. The same report, looking at air monitoring at the Toronto facility, showed that the "Total Number of Samples Exceeding Internal Control Level" was 5 (p. 27). This demonstrates that errors *do* occur. In this case, "[a]n operator was performing the task and was unaware to wipe bowls before dumping" (p. 27). How do these errors particularly effect the workers? Do these errors result in uranium that isn't being filtered through a HEPA filter being released into the environment? Peterborough also failed its "Beryllium hazardous waste reduction" in 2018 (p. 52). Instead of the goal of a 10% decrease, we saw a 6% increase. According to Section 3.9.3.1 of the report, "[t]he Peterborough facility uses beryllium as part of the fuel bundle manufacturing process" (p. 53). Dr. Salvaterra, Peterborough's Medical Officer of Health, reported (in her presentation to Peterborough Council) that the CNSC's own Independent Environmental Monitoring Program has shown a steady increase in beryllium in Peterborough soil samples over the last 3 available data years, 2014, 2018 and 2019 ("General Committee", 2020). This contrasts with the near-zero emissions recorded at all air stack samples at the Peterborough facility. There is a clear discrepancy. Where is the beryllium coming from? Why is it increasing?

The Ontario Ministry of Labour, Training and Skills Development writes that "[i]nhaling beryllium dust or fumes may cause a serious illness in some people. This illness is chronic beryllium disease, an irreversible and sometimes fatal scarring of the lungs. Beryllium exposure may also result in lung cancer" ("Hazard Summary", 2001, para. 1). So, BWXT has a history of releasing toxic agents and has applied for a licence to release more. We aren't talking about

when something goes wrong. This data shows what is already in our air and soil after intensive HEPA filtering, and what increases we can expect to see if pellet-processing is allowed to go forward at the Peterborough facility.

I've used the CRAAP analysis on my research, and in turn have been left with a stench in my nose. There are layers upon layers of issues related to the BWXT property in the heart of Peterborough, Ontario. I've got neighbours and family working for BWXT. But the workers are exposed to the greatest risk of all. Just ask the dozens of retired GE workers who have cancer. Ask the partners who are now widows and widowers. Our livelihoods should not come at the expense of our lives. Workers are adults who may choose to accept certain risks within their jobs—risks of which they should be fully aware. What about the families and children who merely share a neighbourhood with a facility such as BWXT? We don't get a choice. We read the studies, the newspapers, the Compliance Monitoring Reports, we hear worker testimonies and we wonder if all that toxicity might, after all, be affecting our health.

I'm asking the Canadian Nuclear Safety Commission, our Public Health officers and our government to make the decision on our behalf. Get these kinds of facilities out of our downtowns and our backyards. Reject uranium pellet-processing next to schools and homes. Deny BWXT's licensing renewal application. Stop adding toxicity on top of toxicity.

It will not be an epic event. It rarely is. Some people will inhale or ingest the beryllium or uranium in our soil and air, others won't. Some people's DNA will be altered, other people's cells will recover. Slowly, cancer will start to grow in some of us. It may take 10 years, maybe 20, or even longer. Maybe it will grow in our lungs, or maybe it will have travelled through our bloodstream to another area of the body. There will be no way to prove that there is a

correlation or a common origin—just ask the former employees and their families who have been denied worker's compensation. But, if I'm still living in Peterborough 20 years from now, and my non-smoking partner develops lung cancer, or one of my children's kidneys start failing, I will have doubt—doubt that there isn't an underlying cause. Doubt that I, or the CNSC, might have been able to do something about it—and didn't. I hope I have planted a seed of that doubt in your mind.

It is within the power of the CNSC to end this legacy of contamination. *Your* power. Please make our schools, our homes, and our parks a priority. Stop throwing *crap* in our backyards.

Thank you for your time.

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