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Oral Presentation

Written submission from Trista Gilbert

Exposé oral

Mémoire 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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Senior Tribunal Officer, Secretariat
Canadian Nuclear Safety Commission
280 Slater Street, P.O. Box 1046, Station B
Ottawa, Ontario K1P 5S9

January 27th, 2020

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.

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.
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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.

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 occuring.

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 they do not use the word "safe". The Canadian Nuclear Safety Commission allows for a certain amount of risk within the *processing* of uranium. As-low-as-reasonably-achievable does not equal absence of potential harm. It does not equal a certainty of health and wellness.

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). Dr. Edwards alters 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's 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, pg. 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, pg. 5). While we cannot exclude factors such as smoking, sun exposure, nutrition and physical activity, we need to ask, is it possible that facilities such as BWXT (formerly, GE) are contributing to this elevated number? 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? 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, pg. 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 (pg. 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" (pg. 27). How do these errors particularly effect the workers? Do these errors result in uranium being released into the environment that isn't being filtered through a HEPA filter? Peterborough also failed its "Beryllium hazardous waste reduction" (pg. 52). Instead of a 10% decrease, we saw a 6% increase. According to Section 3.9.3.1 of the report, "The Peterborough facility uses beryllium as part of the fuel bundle manufacturing process" (pg. 53). 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 carcinogenic agents into its air 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 after intense 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. Have the parties involved done the same? According to the CNSC website, "[t]he Commission is supported by more than 800 scientific, technical and professional staff. These employees review applications for licences according to regulatory requirements, make recommendations to the Commission, and enforce compliance with the Nuclear Safety and Control Act, regulations and any licence conditions imposed by the Commission ("The Commission", 2018, para. 12). Is it possible that the laws and regulatory requirements are already biased? The World Nuclear Association says that "according to a study by the Canadian Energy Research Institute, Canada's nuclear reactors contribute C$6.6 billion per year to GDP, create C$1.5 billion in government revenue and generate some C$1.2 billion in exports ("Nuclear Power…", 2019, para. 2). That's a lot of money. Governments need money. Citizens need money. There are a lot of jobs connected to the nuclear industry. I've got neighbours and family working for BWXT. But the workers are exposed to the greatest risk of all, and our livelihoods should not come at the expense of our lives.

It will not be an epic event. It rarely is. Some people will inhale or ingest the uranium, 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. 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 my city, 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.

We are a long way from changing the Nuclear Safety and Control Act or the regulatory requirements followed by the Canadian Nuclear Safety Commission, but we can put our foot down. We can "Say no" to uranium pellet processing in our backyard.

Deny the BWXT application. Get uranium away from our schools, hospital, recreation centres and our homes.

Thank you for your time.

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