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Written Submission from Catherine Vakil, M.D.

Mémoire de Catherine Vakil, M.D.

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

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Canada

CNSC hearings May 25, 2026 - Mid-term update from BWXT Nuclear Energy Canada Inc. on licensed activities at its Toronto and Peterborough facilities

Submitted by Catherine Vakil MD, April 17, 2026

I am a family physician in Kingston, Ontario, and Assistant Professor in the Department of Family Medicine at Queen's University. I would like to express concerns about the continuing activity of BWXT Nuclear Energy Canada Inc. in their nuclear facilities in Toronto and Peterborough, as well as their consideration to include uranium pellet production at the Peterborough site. I have not received any funding for my participation in these hearings.

The CNSC hearings of March 2020 in Peterborough witnessed an unprecedented number of interventions by concerned citizens who expressed apprehension about the possibility of BWXT being given a ten year licence to continue its activities, which did not allow for public input for a full ten years. Local citizens were also concerned about BWXT being allowed to produce uranium pellets for fuel bundles at the Peterborough site which is in the middle of a residential neighbourhood and across the street from an elementary school. Despite their completely legitimate concerns, especially for the children at the elementary school across the street, unsurprisingly, the CNSC, which is widely viewed as an industry advocate, decided to grant BWXT a ten year licence. This decision was made despite the dissent of one commissioner, the only one with medical training, who did not agree that exposing vulnerable populations, such as children, to the risks of radiation from BWXT's activities, was justified.

The CNSC did allow for a five year review, which is the subject of these hearings.

Uranium is an alpha emitter. All alpha emitters are carcinogens. Uranium is a Group 1 carcinogen, according to the IARC (International Agency for Research on Cancer, World Health Organization, Monograph 2012). When radioactive particles of radioactive substances such as uranium are inhaled or ingested they deposit in tissue and cause cellular damage that can lead to adult and childhood cancers, immune system dysfunction, diabetes, heart disease and reproductive problems such as infertility, miscarriage, stillbirth and congenital anomalies. If these radioactive particles deposit in sperm or egg cells, they can cause genetic disease

in offspring. Women and girls are much more sensitive to radioactive damage than men and boys. Children and fetuses are particularly sensitive, especially to radiation related diseases such as childhood leukemia. Some of these diseases are incompatible with life, and manifest as early miscarriage, and are therefore unacknowledged and unmeasured. What is especially concerning is that a female fetus's developing ovaries contain her lifetime's eggs during gestation; these eggs will become that fetus's future children. This means that radioactive exposure of a pregnant woman not only affects her health and that of her growing fetus, but her grandchildren as well if the fetus is female.

Importantly, there are no studies on the health effects of uranium in children.

If BWXT begins producing CANDU fuel pellets from uranium oxide powder in Peterborough, we know that the amount of uranium particulates released into the air will increase significantly, similar to levels in Toronto where pelleting occurs. Those most affected by this dust will be young children attending the elementary school right across the street from the BWXT plant.

Uranium also has toxic effects as a heavy metal, most importantly deleterious effects on the kidney. These effects again have not been studied in children.

Beryllium is also of concern regarding children's exposure to BWXT's emissions in Peterborough. Chronic exposure, which is usually occupational, causes Chronic Beryllium Disease (CBD), a serious disabling lung disease that requires ongoing medical treatment, is often fatal and can declare itself many decades after exposure ceases. Beryllium is also toxic to the kidneys, liver, heart and nervous system, and is a Group 1 carcinogen according to the IARC. Community-acquired CBD has been described in some studies, in residents living within five miles of a beryllium facility, and in family members of workers at beryllium facilities. This is important when considering the presence of a beryllium facility such as BWXT in the middle of a residential neighbourhood as is the case in Peterborough. Beryllium exposure has not been studied in children.

There are no studies on the health effects of uranium or beryllium or a combination of exposure to uranium and beryllium, in children. We cannot assume that children are at the same risk as adult males (in whom almost all the studies are done) due to physiological and behavioural differences. With all other toxic exposures children are more sensitive than adults (ie. there is more harm to

children at the same dose per kilogram of body weight than to adults). Our understanding of all of this is incomplete, making it all the more important to be extremely cautious about children's toxic and radionuclide exposures, especially as this is understudied in children.

The legal mandate of the CNSC is to protect human health first and foremost. One of the basic principles of radiation protection is that all unnecessary exposures to ionizing radiation should be eliminated unless there is a clear justification. The benefits to the individuals being exposed or to society at large must be shown to outweigh any dangers of the radiation exposure. It is unjustified that the children at Prince of Wales Elementary School and the residents in the neighbourhood of BWXT bear the health risks of BWXT activities for the rest of their lives with no benefit to them.

The citizens of Peterborough already bear an unfair toxic burden due to industrial activities of General Electric for many years. With the possibility of demolition of some of the GE buildings on the BWXT site, they face even more health risks due to the significant volume of hazardous chemicals present on the site, many of which are known human carcinogens, and which would be difficult to safely remediate.

The activities of BWXT should never be occurring in the middle of a city, especially in the middle of a residential neighbourhood and across the street from a school. The CNSC should consider moving all nuclear operations including uranium pelleting and fuel bundle assembly to sites far away from where people live, similar to what is done in other countries, instead of in the middle of cities close to residential neighbourhoods and schools.

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