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Mémoire de Julian Aherne, Gary Burness, James Connolly, Peter Lafleur, Erica Nol, Mark Parnis et Rachel Wortis

In the Matter of the

À l'égard de

BWXT Nuclear Energy Canada Inc., Toronto and Peterborough Facilities

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

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Background

BWXT is licensed to operate a nuclear fuel fabrication facility in Peterborough, Ontario. The facility is permitted to emit uranium [U] and beryllium [Be] to air and water, e.g., atmospheric emissions of Be discharged from the facility meet the provincial annual standard of 0.03 µg/m^3. Beryllium is a highly toxic carcinogen, the major pathway for human exposure is through airborne particles of beryllium metal or oxide (Daugherty 1992; ATSDR 2013). The BWXT facility at Peterborough is not required to implement an Environmental Monitoring Program (EMP) as emissions meet the Ministry of Environment, Conservation and Parks (MECP) annual standard at the point of release.

Independent Environmental Monitoring Program (IEMP)

The CNSC implemented the IEMP to verify that the public and the environment around licensed nuclear facilities are safe. The IEMP involves taking samples from public areas around the facilities and measuring the amount of radiological (nuclear) and hazardous substances in those samples.

There have been three IEMP sampling periods in Peterborough, carried out during 2014, 2018 and 2019 (typically carried out in June or July). The concentrations of U and Be have been measured in air, water, vegetation and soil samples collected during each campaign. The air, water and vegetation samples are too few (e.g., four air samples and two water samples in 2018) to reliably assess environmental changes in U or Be.

The results of the soil monitoring provide the most representative data to assess the impacts of BWXT operations on human health and the environment. Soil sampling was carried out at eight fixed locations during each campaign (2014, 2018 and 2019). Despite the limited sample size, the repeated sampling (n = 3) at fixed monitoring locations can provide an indication of environmental trends. It is important to note that surface soil (depth of 0–5 cm) is monitored 'as an indicator of U or Be accumulation from atmospheric deposition', rather than direct emissions to soil. Metal accumulation in soil is widely used to assess temporal changes in their atmospheric deposition (e.g., see Schröder et al., 2017).

Review of the IEMP data

The IEMP data (CNSC, 2019) indicate a statistically significant increase in soil Be concentrations across the eight sampling sites. On average, there was an increase of 26% across the eight sites between 2014 and 2018, and a further increase of 12% between 2018 and 2019. The soil sampling site with the highest observed increase between 2014 and 2019 was the Prince of Wales Elementary School playground, which is located within 200 m from the BWXT facility boundary.

We acknowledge the limitations of the small sample size; however, the repeated sampling provides greater statistical power to detect trends suggesting that the observed increase reflects a true environmental phenomenon.

Despite the small sample size, it is extremely likely that there is an accumulation of Be in soils. Since there are no natural emissions sources of Be in the Peterborough area, it is also extremely likely that this increase can be attributed to atmospheric emissions from the BWXT facility. This is inconsistent with the CNSC observation that '*Beryllium stack discharges to the environment from the Peterborough facility are considered to be negligible*'.

We note that '*The Commission will only issue a licence if it is satisfied that the proposed nuclear facility or activity would pose no danger to the health, safety and security of persons and the environment*'. Our analysis of the IEMP data indicate that current emissions from the BWXT facility in Peterborough may pose a risk to human and environmental health.

Recommendations based on the above findings:

We recommend that CNSC suspend the BWXT licence renewal application and immediately identify the source of beryllium leading to the observed increase in soils under the existing licence.

We recommend that CNSC require all facilities located within residential areas to implement an EMP irrespective of the level of facility emissions.

References

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