Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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Supplementary Information
Oral Presentation

Presentation from
Anna Tilman

Renseignements supplémentaires
Exposé oral

Présentation d'
Anna Tilman

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

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

Canada

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Presentation to the Canadian Nuclear Safety Commission (CNSC)

BWXT's Application re:

Renewal of its Operating Licence for its Toronto and Peterborough Facilities for a 10-year Period

March 2,3 2020

Anna Tilman

Overview of BWXT's Licence Application Request to CNSC

- **10-year renewal of its licence is based on its current possession and processing limits of Uranium:**
  - **Possession:** Maximum of 700 Mg (700,000 kg) at the Toronto facility; 1500 Mg (1,500,000 kg) at the Peterborough facility in any form at any given time;
  - **Processing:** Maximum of 150 Mg (150,000 kg) at each facility in any form in any calendar month.
- **Approval of a revised financial guarantee**
- **Authorization to conduct pelleting operations at the Peterborough facility.**

Description of Facilities
Toronto and Peterborough

- Facilities in operation since 1965. Located in mixed industrial commercial and residential areas.
- Toronto facility: Manufactures uranium dioxide (UO_2) pellets from UO_2 powder shipped from Port Hope.
- Peterborough facility: Loads pellets from Toronto facility into Zircaloy tubes manufactured at BWXT's Arnprior facilty. Tubes are sealed, assembled into fuel bundles – shipped to Darlington and Pickering nuclear stations.
- Pellets from the Toronto facility are also shipped to a GE-Nuclear Energy facility in North Carolina.

Community Concerns

- **Potential for adverse health effects, especially children, from exposure to uranium (air, soil, etc.) and other toxic substances routinely released from these plants.**
- **Transportation of UO_2 powder, pellets, and fuel bundles through the community and to and from facilities.**
- **Emergency, evacuation plans – are they even feasible??**
- **Lack of transparency and information about plant operations.**

Are government agencies doing enough to protect the health of the community?

Licensed Limits
Specific Issues

- **No relevance to actual emissions.**
  - **They provide no meaningful basis for determining the safety of the plant's operations.**
  - **These limits are clearly not precautionary or protective.**
- **The public has not been informed how these limits have been established.**

There is no confidence that the oversight by CNSC is adequate to ensure public safety.

Radiation Protection –Workers

- Equivalent Dose Exposure - Extremities & Skin
  - Set at 500 mSv/year
  - How was this metric determined? What is the justification for this high value?
  - On what basis can CNSC find these levels "safe"?
- BWXT -Toronto:
  - Maximum extremity dose: 357.29 mSv/year in 2012 - highest level over all nuclear fuel processing plants.
  - CNSC's description of this incident:

    "this dose represents 71 percent of the regulatory annual equivalent dose limit of 500 mSv and well within levels known to cause health effects." …a rather disturbing response.

Action Levels (AL)- Uranium

- **Action Levels (ALs) set below regulatory limits**
  - **If exceeded, reporting to CNSC is required**
- **Most sensitive areas: extremities (hands, arms, etc) and skin**

Current ALs

Peterborough

	Period	Action Level (mSv)
Skin Dose	1 year	100
Extremity dose	1 year	200

Toronto

	Period	Action Level (mSv)
Skin Dose	1 year	350
Extremity dose	1 year	350

- **Toronto, Reason for higher AL - Pellet making operations**

BWXT and CNSC Staff Reports - Deficiencies

- No mention of any specific modifications to the plants to reduce emissions (e.g., uranium).
- No information on uranium emissions over decades of operation.
- No information on the quantity of pellets made, or shipped to the plant in North Carolina.
- No explanation for the need to increase the amount of pellets manufactured by introducing this operation at Peterborough.

Deficiencies (cont'd)

- **Health and Safety: No tracking of exposure or potential health effects for residents, especially the most vulnerable, children, pregnant women, etc.**
- **Very limited information on radiation doses and health effects for workers, or worker protection requirements, or exposure to beryllium.**
- **Waste: No indication of the nature or contents of "miscellaneous contaminated material" stored at these facilities, or where or how it is disposed of.**
- **No indication of specific modifications, improvements, made to the plants to reduce emissions (e.g., uranium, and other toxic substances).**
- **No revisions have been made to regulatory or action limits.**
- **No analysis of cumulative effects on health and the local environment.**

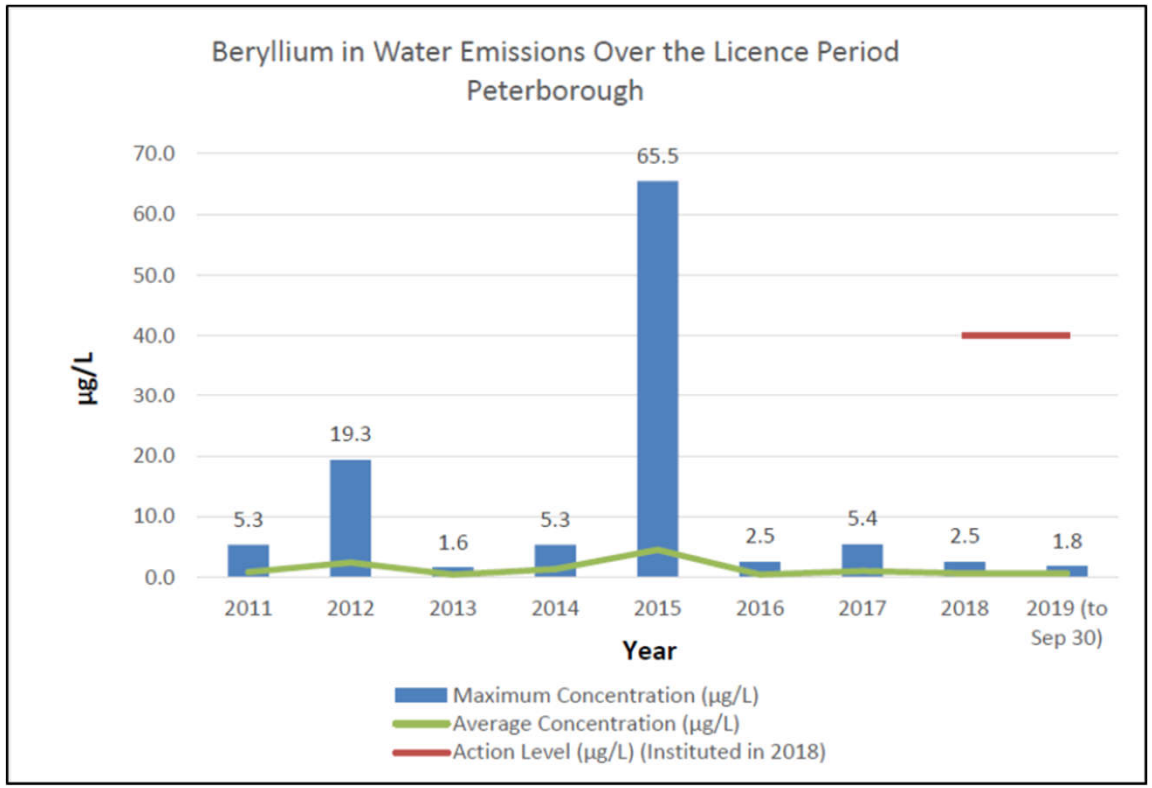
Event Reports

- **“Events” are not succinctly described in either BWXT’s licence application document orCNSC’s staff report.**
- **Lack of clarity of the number of reportable events, the specific action to be taken, and follow-up.**

The lack of information on accidents, events, et., is a lack of public disclosure. It should not be the purview of the licensee or the licensor to not disclose this information clearly and publicly.

Beryllium Concentration in Water (µg/L) 2011 - 2019

The Action Level is 40µ g/L. For the year 2015, the maximum concentration is 65.6 µg/L, the average concentration is approximately 4µg/L.



Impact of averaging emissions - Averages mask the necessary detail that would demonstrate anomalies.

Uranium Concentration in Effluent

Facility Licence Operating Limits (FLOLs) vs effluent concentrations

Parameter	Toronto	Peterborough
Licence Limit (FLOL)	9,000	760
2011	1.0	0.00010
2012	0.90	0.00010
2013	0.83	0.00020
2014	0.72	0.00014
2015	0.39	0.00006
2016	0.65	0.00013
2017	0.94	0.00003
2018	0.94	0.00001

Effluent releases limits are several orders of magnitude below the FLOLs. This questions the relevance and effectiveness of these limits.

Uranium - Health Effects

- Routes of exposure: inhalation, ingestion and dermal contact.
- Uranium discharged to air will be deposited on soil, water and vegetation, locally and long-range.
- Health effects:
  - kidney toxicity
  - Radiological effects - cancer is the predominant endpoint.
  - Cumulative over a long time
  - Vulnerable populations most sensitive
- Direct exposure to workers

Beryllium - Toxicity

- **Exposure to beryllium in the workplace (via inhalation) can lead to a sensitization immune response and result in "chronic beryllium disease" (CBD), a chronic life-threatening allergic disease.**
- **Symptoms of CBD can take up to five years to develop.**
- **The International Agency for Research on Cancer (IARC) lists beryllium and beryllium compounds as Category 1 carcinogens.**
- **Beryllium is chemically similar to magnesium, and thus can displace magnesium from enzymes, which can cause them to malfunction.**
- **The body has no means to control beryllium levels. Once inside the body, beryllium cannot be removed.**

Beryllium – Toxicity (cont'd)

- **Appropriate dust control equipment is needed <u>at all times</u>.**

  Are such control equipment at the Peterborough facility?

- **Workers handling finished beryllium pieces are advised to handle them with gloves.**

  Is this mandatory at this facility?

Summary

- **The lack of transparency of facility operations is unacceptable.**
- **The submission by BWXT is deficient and inadequate.**
- **Operating such facilities in residential and densely populated areas is unacceptable.**
- **Key concerns of residents are not being addressed.**
- **Public right-to-know supersedes industrial interests.**
- **There is no confidence that the oversight by CNSC is adequate to ensure public safety.**

Conclusions

The continuation of operations of these facilities are not in the public interest, or in the interest of the affected communities, whose water, land, air, and terrestrial habitat are put at risk.

More than enough damage has been done over several decades. Closure is the only way to prevent more harm.

Therefore…….

Recommendations

- **It is strongly recommended that the Commission reject BWXT's 10-year licence request as is, and in particular, deny its request to manufacture pellets at the Peterborough facility.**
- **In working toward closure, BWXT must be required to prepare a detailed decommissioning plan, including costs. The plan must be subject to expert review and be developed with full community involvement and subject to public scrutiny.**