



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2022



CNSC Staff Presentation

Commission Meeting
December 14, 2023
CMD 23-M35.A



e-Doc 6987944 (pptx)

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Presentation Outline

- Overview
- Facility Types
- CNSC Staff Assessment
- Indigenous Consultation and Engagement
- Public Engagement
- Key Themes from Interventions
- Conclusions



Regulatory Oversight Reports (RORs) provide information to the Commission on regulatory oversight activities and licensee safety performance over a designated time period

This presentation covers the 2022 calendar year for Uranium and Nuclear Substance Processing Facilities (UNSPF) and includes:

- CNSC's regulatory efforts
- Overviews of licensing and compliance verification activities
- Ratings for all 14 safety and control areas (SCAs)
- Detailed performance reporting on safety and control areas of:
 - Radiation Protection
 - Conventional Health and Safety
 - Environmental Protection



CNSC Inspector at air sampling station
at Cameco's Blind River Refinery (Source: CNSC)



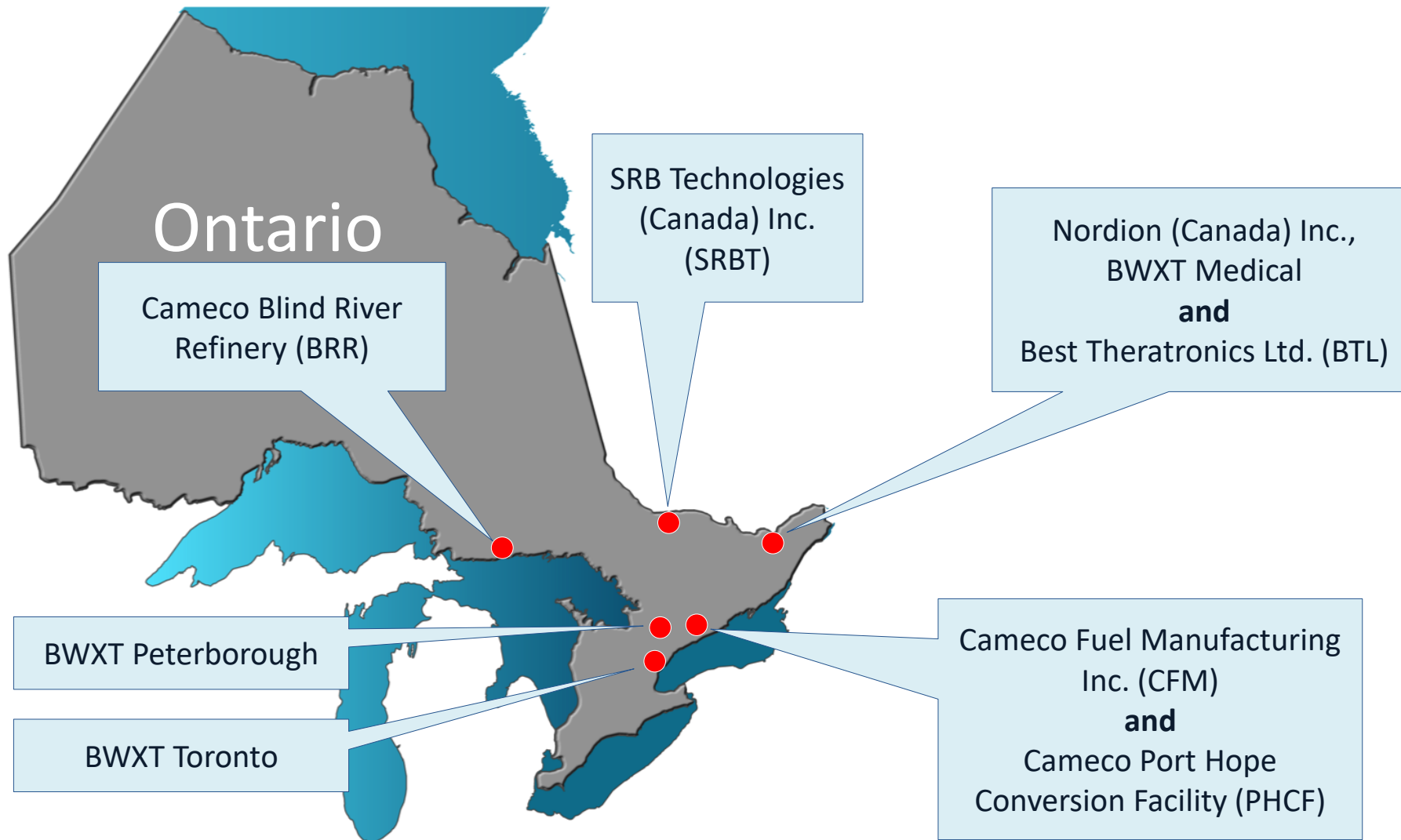
UNSPPF ROR Changes – 2022

As a result of recommendations from the Commission, feedback from intervenors, commitments made by staff, as well as continuous improvement from previous RORs, a number of changes were made to this year's report:

- A description of Environmental Protection Review (EPR) reports has been added
- Terms of Reference for long term engagement with Indigenous Nations and communities were moved to an appendix
- An appendix has been added, which summarizes the number of issues, concerns and recommendations submitted by Indigenous Nations and communities who intervened in the previous (2021) UNSPF ROR

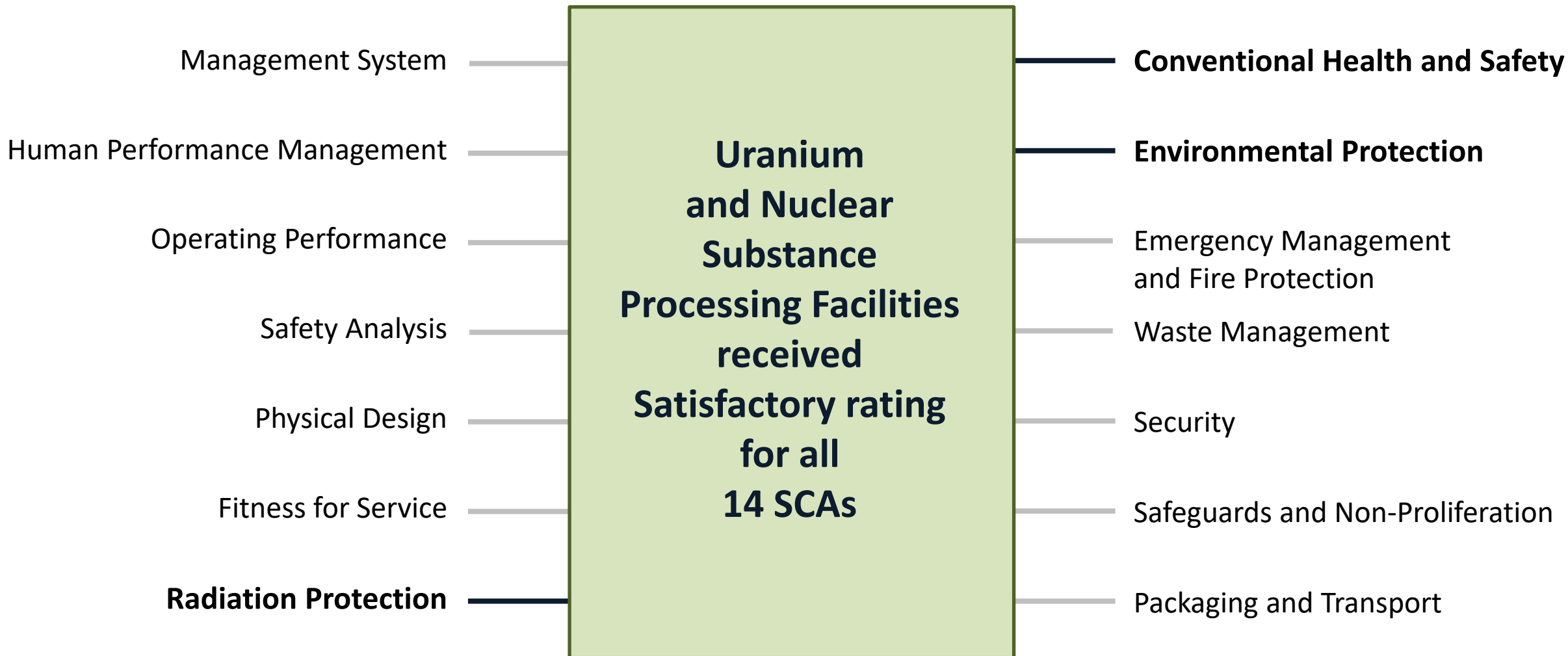


Uranium and Nuclear Substance Processing Facilities





Safety and Control Area (SCA) Ratings





Facility Highlights: Reporting and Licensing

Facility	Reportable Events	Action Level Exceedances	Regulatory Limit Exceedances	Licensing Decisions
Blind River Refinery	1	0	0	0
Port Hope Conversion Facility	5	17	0	0
Cameco Fuel Manufacturing	3	0	0	1
BWXT Toronto	1	0	0	0
BWXT Peterborough	4	0	0	0
SRB Technologies	0	0	0	1
Nordion	5	0	0	0
Best Theratronics Limited	0	0	0	0
BWXT Medical	8	0	0	0
Total	27	17	0	2



Facility Highlights: Inspections

Facility	Inspections (NNCs)*	Safety Significance of NNCs	CNSC-led Safeguards Inspections	IAEA-led Safeguards Inspections (NNCs)
Blind River Refinery	4 (23)	Low	0	7 (0)
Port Hope Conversion Facility	4 (4)	Low	0	8 (0)
Cameco Fuel Manufacturing	4 (8)	Low	0	6 (0)
BWXT Toronto	4 (8)	Low	1 (0)	5 (0)
BWXT Peterborough			0	4 (0)
SRB Technologies	2 (6)	Low	0	0
Nordion	2 (0)	Low	0	1 (0)
Best Theratronics Limited	2 (6)	Low	0	1 (0)
BWXT Medical	2 (0)	Low	0	2 (0)
Total	24 (55)	-	1 (0)	34 (0)

*NNC = Notice of non-compliance



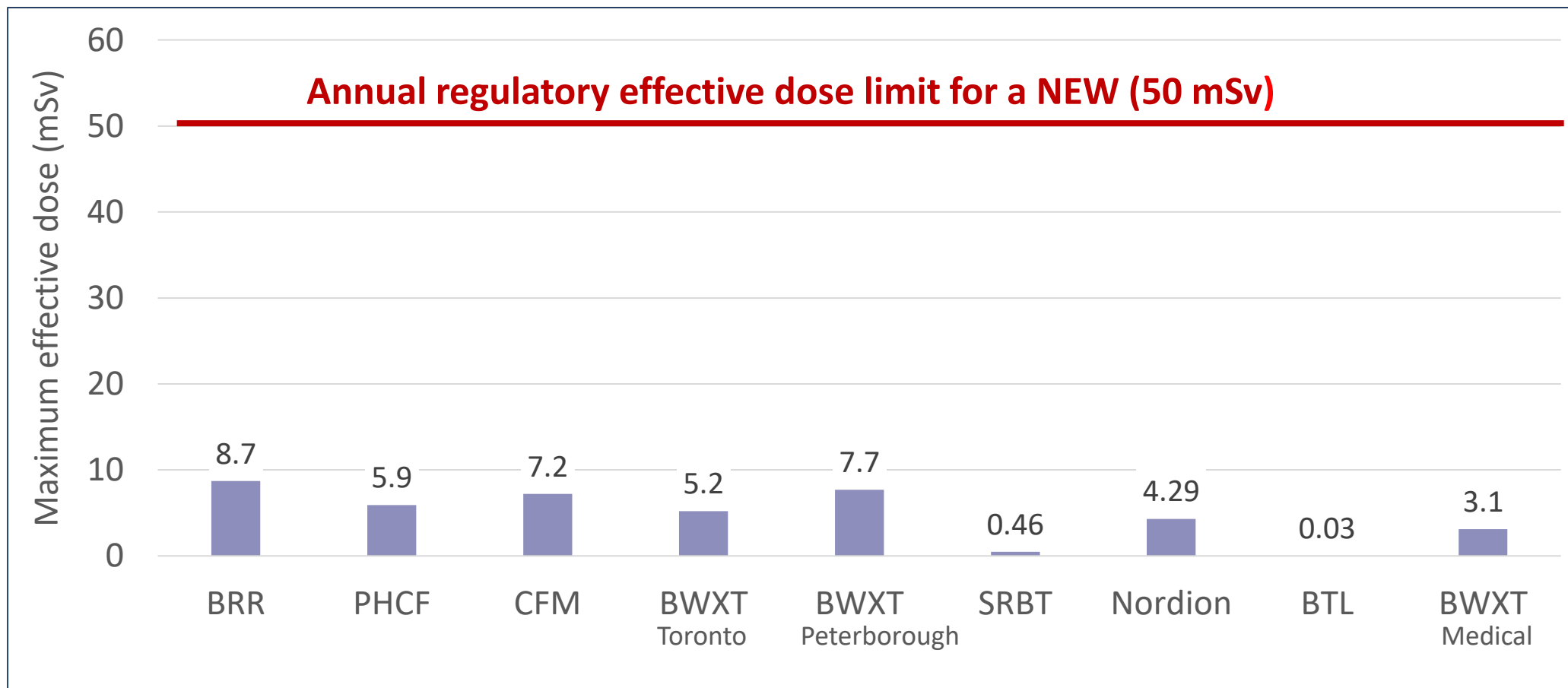
Port Hope Conversion Facility reactive inspection and issuance of warning letter

- In response to an external complaint, CNSC inspectors conducted a **reactive inspection**, December 7-9, 2022.
- Based on the inspection, CNSC staff concluded that **PHCF remains in compliance with their licensing requirements**.
- However, during the inspection, Cameco staff chose to stop the inspection. Cameco subsequently cooperated and the inspection resumed. Upon review of the situation, CNSC staff issued a **warning letter**, as Cameco did not give the inspector all reasonable assistance to enable the inspector to carry out its duties and functions.
- Cameco responded with planned actions to ensure that Cameco personnel are aware of their obligations under the *Nuclear Safety and Control Act* during the conduct of an inspection.
- In August 2023, CNSC staff conducted an **unannounced reactive inspection** at PHCF, had full cooperation from Cameco staff, and found no non-compliances.



Radiation Protection (1/2)

Maximum Doses to Nuclear Energy Workers (NEWs) in 2022





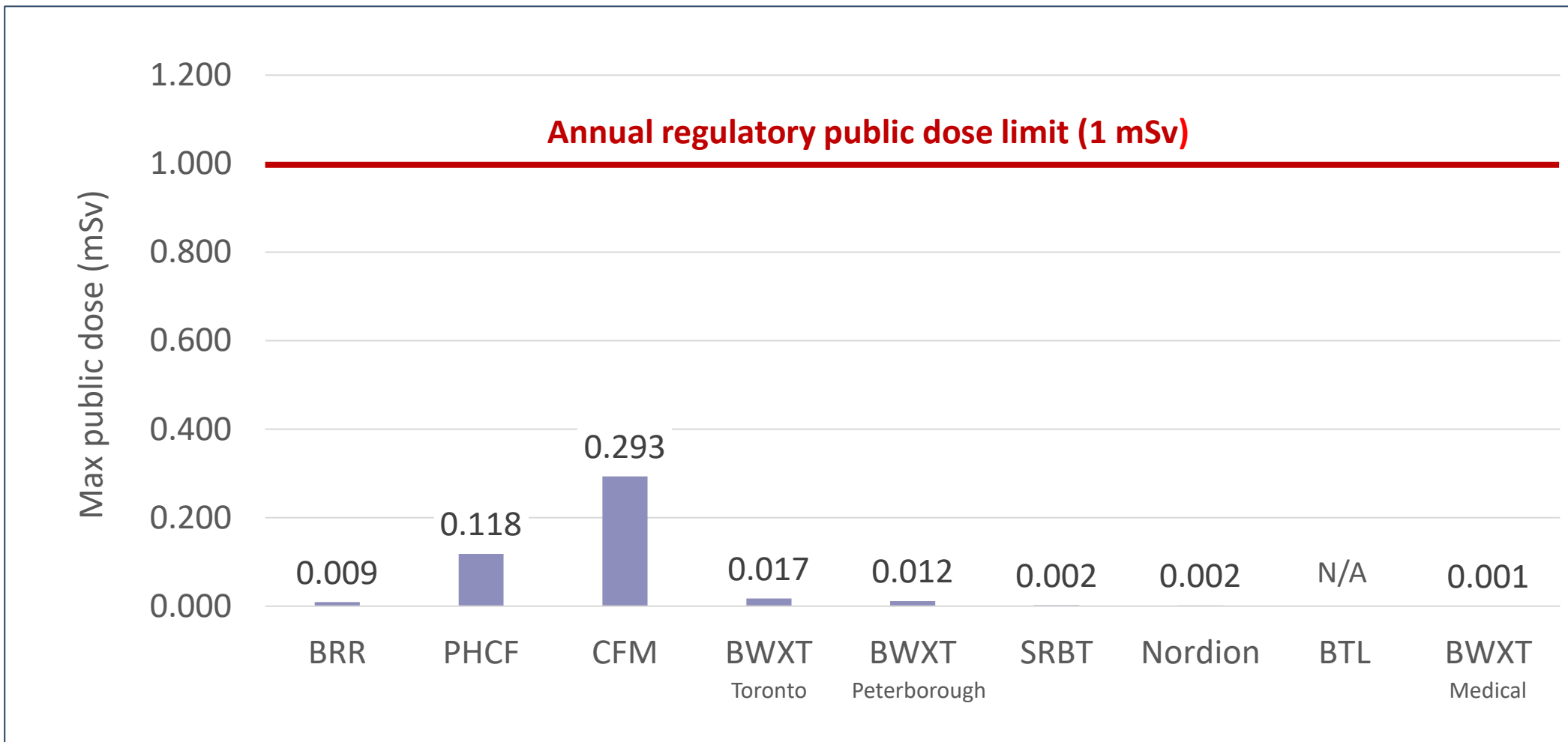
Uranium in Urine Analysis

- Included in the ROR as a result of direction from the Commission in the BRR Record of Decision
- Reported on for NEWs from the Uranium Processing Facilities (BRR, PHCF, CFM and BWXT Toronto and Peterborough)
- Five years of urine analysis results reported (2018-2022)
- No action level exceedance for uranium in urine was reported in 2022

Workers are protected from uranium exposure



Maximum Dose to Public





Conventional Health and Safety

Lost-time injuries (LTIs):

- An injury or illness resulting in lost days beyond the date of injury as a direct result of an occupational injury or illness incident
- Key performance indicator for conventional health and safety
- In 2022, two of the nine facilities covered by the ROR reported LTIs related to CNSC licensed activities

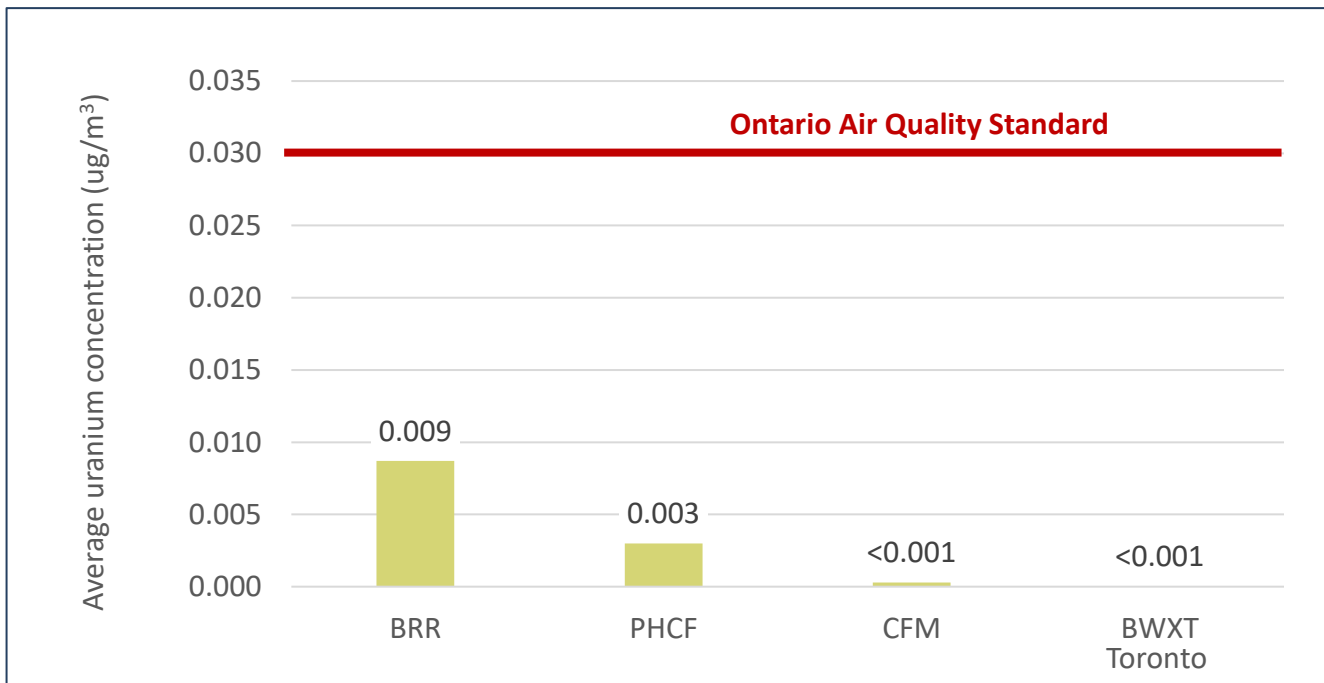
Nordion	An employee tripped and injured their knee, resulting in surgery
BWXT Medical	An employee injured their forehead and fingers while operating a hand drill, temporarily lost consciousness and was transported to hospital

Licensees maintained effective oversight of health and safety of workers

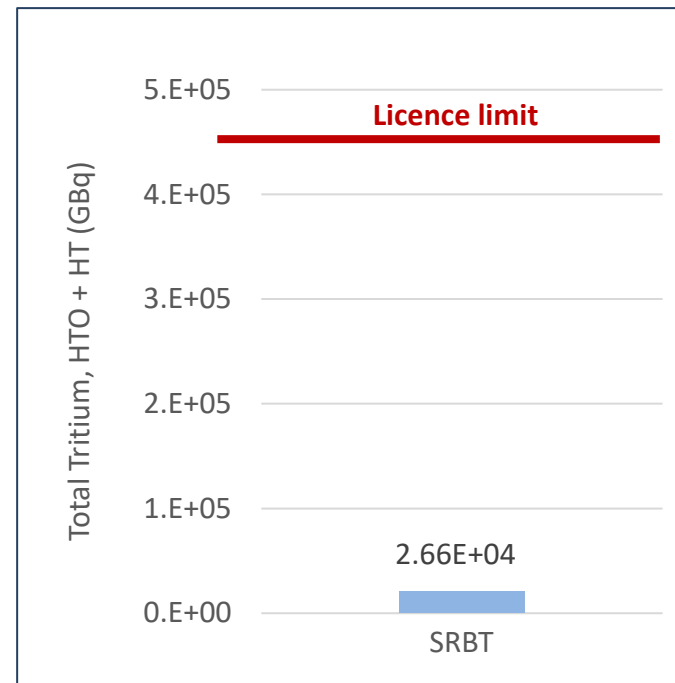


Environmental Protection: Atmospheric Releases

Uranium in ambient air (average)



Tritium releases



*Four UNSPF facilities have no or negligible releases

Releases were well below regulatory limits



Port Hope Conversion Facility

March – September 2022

- 15 exceedances above the action level of 100 µg/L for the daily composite sample uranium result from the combined facility sanitary sewer discharge
- Occurrences attributed to groundwater infiltration into an aging sewer system during heavy precipitation events
- Cameco has implemented corrective actions and are continuing to repair and upgrade sections of the sanitary sewer network as part of the Vision in Motion project

June 2022

- Main stack daily average for uranium was 45 g/h (action level is 40 g/h)
Attributed to breach of a filter

August 2022

- Main stack daily average for fluoride was 236 g/h (action level is 230 g/h)
Attributed to a failed valve resulting in a fluorine leak

There were no impacts on the environment as a result of the action level exceedances



Independent Environmental Monitoring Program (IEMP)

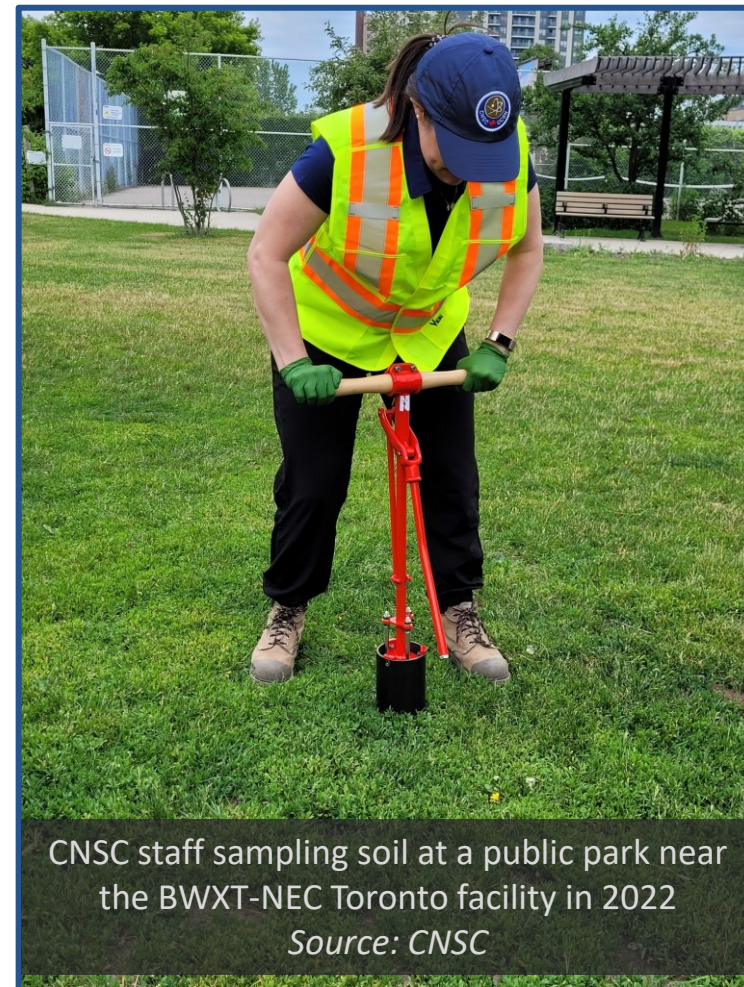
During IEMP campaigns, CNSC staff sample air, water, soil, vegetation, and local food to support CNSC staff's conclusions on the state of the environment.

The IEMP program selects sites each year based on a 10-year sampling plan.

In 2022, CNSC staff sampled air and soil in the community near BWXT NEC Toronto.

Results are posted on the [CNSC website](#).

Environment and local community are protected from releases from the BWXT Toronto facility



CNSC staff sampling soil at a public park near the BWXT-NEC Toronto facility in 2022

Source: CNSC



Indigenous Consultation and Engagement

General and Commission proceeding-related activities:

- Notification about licence application and opportunities to participate
- Virtual meetings and webinars
- Monitoring and assessment of Licensee engagement activities and programs
- Provision of opportunities to consult on environmental monitoring activities (IEMP)
- Development of Terms of Reference for Long-Term Engagement
- Follow up on previous interventions and recommendations

Terms of Reference for Long-term Engagement Signed with:
Métis Nation of Ontario (December 2019)
Curve Lake First Nation (February 2021)
Mississaugas of Scugog Island First Nation (March 2022)
Kebaowek First Nation (September 2022)
Algonquins of Pikwakanagan First Nation (November 2022)



Public Engagement

- Participation in the 2022 Port Hope Fall Fair
- Virtual webinars related to:
 - SRB Technologies licence renewal
 - Cameco Fuel Manufacturing licence renewal (x2)
- Sharing information through mail drops, CNSC website, social media channels, and annual regulatory reports
- Discussions with Nuclear Transparency Project on their intervention and recommendations related to the 2021 UNSPF ROR



CNSC staff at the Port Hope Fall Fair in 2022

CNSC is committed to disseminate information and provide opportunities for discussion



Recommendations from the extended beryllium in air sampling in 2022 near BWXT Peterborough:

- Three location sampled in consultation with Dr. Aherne (Associate Professor, Trent University)
- Results show levels of beryllium in air are well below guidelines and do not pose any risk to health or the environment
- Results also presented to the BWXT Peterborough Community Liaison Committee
- Report available on the [CNSC website](#) and disseminated to stakeholders



Human health and the environment remain protected in Peterborough



Participant Funding Program

- CNSC awarded approximately **\$65,000** through the Participant Funding Program
- Funding was awarded to 4 recipients based on independent funding committee recommendations

Recipients
Algonquins of Pikwakanagan First Nation
Hiawatha First Nation
Nuclear Transparency Project
Kebaowek First Nation



Key Themes

Indigenous consultation and engagement

- Greater detail and specific examples of how CNSC staff incorporate feedback from Indigenous Nations and Communities in their reporting
- Review of language in relation to Indigenous Nations and communities

CMD content and ROR process

- Further details related to events and non-compliances
- Provision of data
- Opportunity to present orally

Intervenors
Kebaowek First Nation
Algonquins of Pikwakanagan First Nation
Hiawatha First Nation
Nuclear Transparency Project
Canadian Nuclear Society
Canadian Nuclear Workers' Council

CNSC staff will provide intervenors with a disposition of their interventions



Participant Funding: Kebaowek First Nation applied for and was granted \$25,000 in Participant Funding in October 2023 and were not listed in the CMD as PFP recipients since the CMD was submitted to the Registry in August 2023.

Appendix I, *Environmental Data*. Licence limits for emissions from Cameco Fuel Manufacturing were not updated to reflect new limits that came into effect in 2022:

- Table I-12, page 76, The CFM licence limit for atmospheric emissions was changed from 14kg/year to 10.5kg/year with the issuance of the 1-year licence on March 1, 2022. CFM’s atmospheric emissions remained well below the new licence limit in 2022.
- Table I-13, page 77, The CFM licence limit for liquid effluent was changed from 475kg/year to 1.7mg/L (approximately 62kg/year) with the issuance of the 1-year licence on March 1, 2022. CFM’s liquid effluent remained well below the new licence limit in 2022.

Appendix I, *Environmental Data*: Table I-20, page 82, the 2022 value for beryllium in liquid effluent at BWXT NEC Peterborough was incorrectly entered as 0.033 mg/L. The correct value is 0.0033 mg/L.

The errata do not impact the conclusions of the ROR



Safety Performance Conclusions

CNSC staff are of the view that licensees operating uranium and nuclear substance processing facilities in 2022:

- Maintained radiological doses to workers and the public well below regulatory limits
- Continued to protect the public and environment through environmental protection programs
- Protected workers with conventional health and safety programs
- Effectively implemented programs in support of all SCAs
- Addressed all identified non-compliances in a timely manner

CNSC staff are satisfied that licensees continue to protect the health and safety of workers, public and the environment



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