



# Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2016

Commission Meeting  
December 13, 2017  
CMD 17-M45.A



CNSC Staff Presentation



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# Presentation Outline

## Overview of CNSC Regulatory Oversight

- Safety and control area performance ratings
- Regulatory limits and action levels
- Public information and community engagement
- Independent Environmental Monitoring Program

## Safety Performance of Uranium Processing Facilities

## Safety Performance of Nuclear Processing Facilities

## Participant Funding and Interventions

### Uranium Processing Facilities

Cameco Blind River Refinery

Cameco Port Hope Conversion Facility

Cameco Fuel Manufacturing

BWXT Nuclear Energy Canada

### Nuclear Substance Processing Facilities

SRB Technologies (Canada) Inc.

Nordion (Canada) Inc.

Best Theratronics Ltd.



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## CNSC Regulatory Oversight Reports, 2016

- Canadian nuclear power plants – August 16, 2017
- Use of nuclear substances in Canada – October 12, 2017
- **Uranium and nuclear substance processing facilities in Canada – December 13, 2017**
- Uranium mines and mills in Canada – December 13, 2017

### Summary of licensee performance for 2016



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# Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2016

## This report highlights:

- CNSC's regulatory efforts
- Licensees' performance rating for the 14 safety and control areas with a focus on the following three key performance indicators:
  - Radiation protection
  - Environmental protection
  - Conventional health and safety
- Licensing activities, major developments and significant events



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# CNSC REGULATORY OVERSIGHT



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## CNSC Regulatory Oversight

- Regulatory oversight includes licensing, compliance and enforcement activities, as well as reporting to the Commission
- Compliance is verified through:
  - inspections
  - reviews of operational activities and documentation
  - licensee reporting of performance data, including annual reports and unusual occurrences
  - independent environmental monitoring by CNSC

**Risk-informed and performance-based approach**



CNSC inspectors at BWXT Toronto (top) and Cameco's Blind River Refinery (bottom).

Photo source: CNSC



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## CNSC Regulatory Oversight Ratings and Performance

- Safety and control areas (SCA) are used to assess and evaluate licensee performance
- CNSC staff rate performance as:
  - Fully satisfactory
  - Satisfactory
  - Below expectations
  - Unacceptable
- Ratings are derived from results of regulatory oversight activities



Safety and Control Area	
Management System	
Human Performance Management	
Operating Performance	
Safety Analysis	
Physical Design	
Fitness for Service	
Radiation Protection	
Conventional Health and Safety	
Environmental Protection	
Emergency Management and Fire Protection	
Waste Management	
Security	
Safeguards and Non-Proliferation	
Packaging and Transport	



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## CNSC Regulatory Oversight SCA Performance Rating Methodology

- Each SCA comprises several specific areas and metrics
- CNSC staff use expert judgement and rate performance based on multiple inputs, including:
  - key performance indicators (e.g. lost time injuries, dose to workers, environmental releases)
  - results of compliance activities (e.g. inspections, event review and follow-up, and technical assessments)
  - repeat occurrences of non-compliance and licensee actions

**Ratings represent a holistic summary of each SCA**

### Example:

#### SCA: Radiation Protection

Specific areas:

- application of ALARA
- worker dose control
- radiation protection program performance
- radiological hazard control
- estimated dose to public





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## CNSC Regulatory Oversight

# Regulatory Limits and Action Levels

### Regulatory dose limits

- Established to ensure safety to workers and members of the public
- Set in regulations
- Significantly below the threshold for health effects

### Release limits

- Established to limit the quantity of nuclear and hazardous substances released into the environment

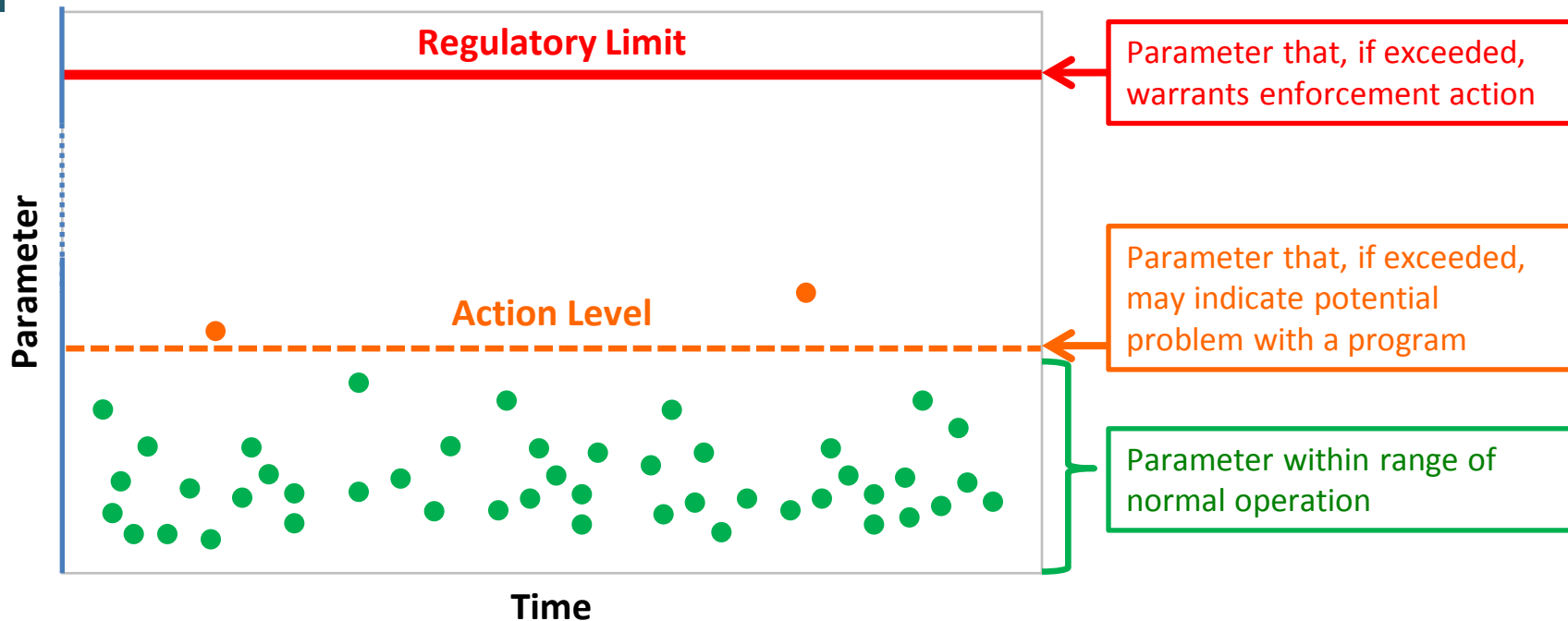
### Action levels

- Indicators to determine if there is a potential loss of control in a licensee's programs
- Established based on operating performance, at a level well below regulatory limits
- Assure intervention by the licensee before limits are exceeded



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# CNSC Regulatory Oversight Regulatory Limits and Action Levels





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## Public Information and Community Engagement

- CNSC staff regularly engage with the public and Indigenous groups
- In 2016, CNSC staff participated in:
  - CNSC 101 Session in Port Hope (May)
  - community and Indigenous group meetings in Blind River (February, July)
  - community engagement regarding the Port Hope Conversion Facility licence renewal (September)

**Structured, formalized and transparent**



CNSC staff at the Port Hope Fall Fair in  
September 2016.

Photo source: CNSC



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# Independent Environmental Monitoring Program (IEMP)

CNSC staff sample air, water, soil, vegetation, and various foods to independently verify that the public and the environment are protected.

2016	2017	2018
BWXT Nuclear Energy Canada (Toronto)	Cameco Blind River Refinery	BWXT Nuclear Energy Canada (Peterborough)
	Cameco Port Hope Conversion Facility	SRB Technologies (Canada) Inc.
Nordion (Canada) Inc.	Cameco Fuel Manufacturing Inc.	Nordion (Canada) Inc.

## All results are posted on the CNSC's website



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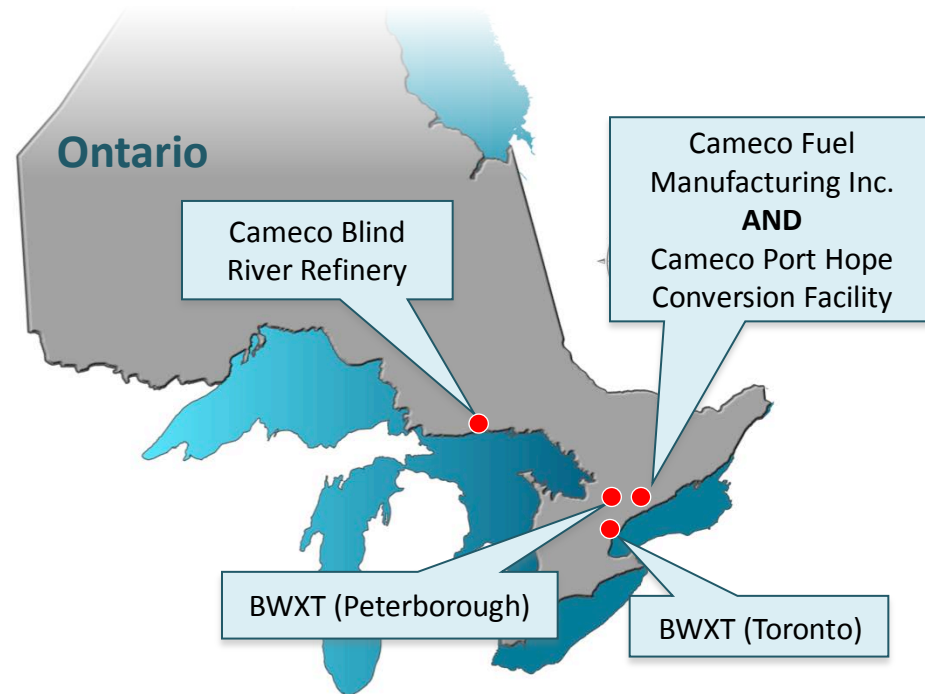
# URANIUM PROCESSING FACILITIES



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# Uranium Processing Facilities

Facility	Licence Expiry	Financial Guarantee (approx.)
Blind River Refinery	February 2022	\$38.6M
Port Hope Conversion Facility	February 2027	\$128.6M
Cameco Fuel Manufacturing	February 2022	\$19.5M
BWXT Toronto and Peterborough	December 2020	\$52.4M





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# Uranium Processing Facilities Regulatory Oversight in 2016

	Blind River Refinery	Port Hope Conversion Facility	Cameco Fuel Manufacturing	BWXT Toronto and Peterborough	Totals
Person Days for Licensing	10	672	9	47	<b>738</b>
Person Days for Compliance	236	438	280	233	<b>1177</b>
Number of Inspections	4	4	3	3	<b>14</b>
Inspection Action Items	16	19	22	13	<b>70</b>
12(2) Requests for Information	1	1	1	1	<b>4</b>
Orders	0	0	0	0	<b>0</b>
Administrative Monetary Penalties	0	0	0	0	<b>0</b>



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# Uranium Processing Facilities Performance Ratings 2016

FS = Fully Satisfactory

SA = Satisfactory

BE = Below Expectations

UA = Unacceptable

Safety and Control Area	Blind River Refinery	Port Hope Conversion Facility	Cameco Fuel Manufacturing	BWXT Toronto and Peterborough
Management System	SA	SA	SA	SA
Human Performance Management	SA	SA	SA	SA
Operating Performance	SA	SA	SA	SA
Safety Analysis	SA	SA	SA	SA
Physical Design	SA	SA	SA	SA
Fitness for Service	SA	SA	SA	SA
Radiation Protection	SA	SA	SA	SA
Conventional Health and Safety	FS	SA	SA	SA
Environmental Protection	SA	SA	SA	SA
Emergency Management and Fire Protection	SA	SA	SA	SA
Waste Management	SA	SA	SA	SA
Security	SA	SA	SA	SA
Safeguards and Non-Proliferation	SA	SA	SA	SA
Packaging and Transport	SA	SA	SA	SA

### Fully Satisfactory:

- safety and control measures are highly effective
- exceeds requirements and CNSC expectations
- compliance is stable or improving

### Satisfactory:

- safety and control measures are sufficiently effective
- meets requirements and CNSC expectations
- improvements planned



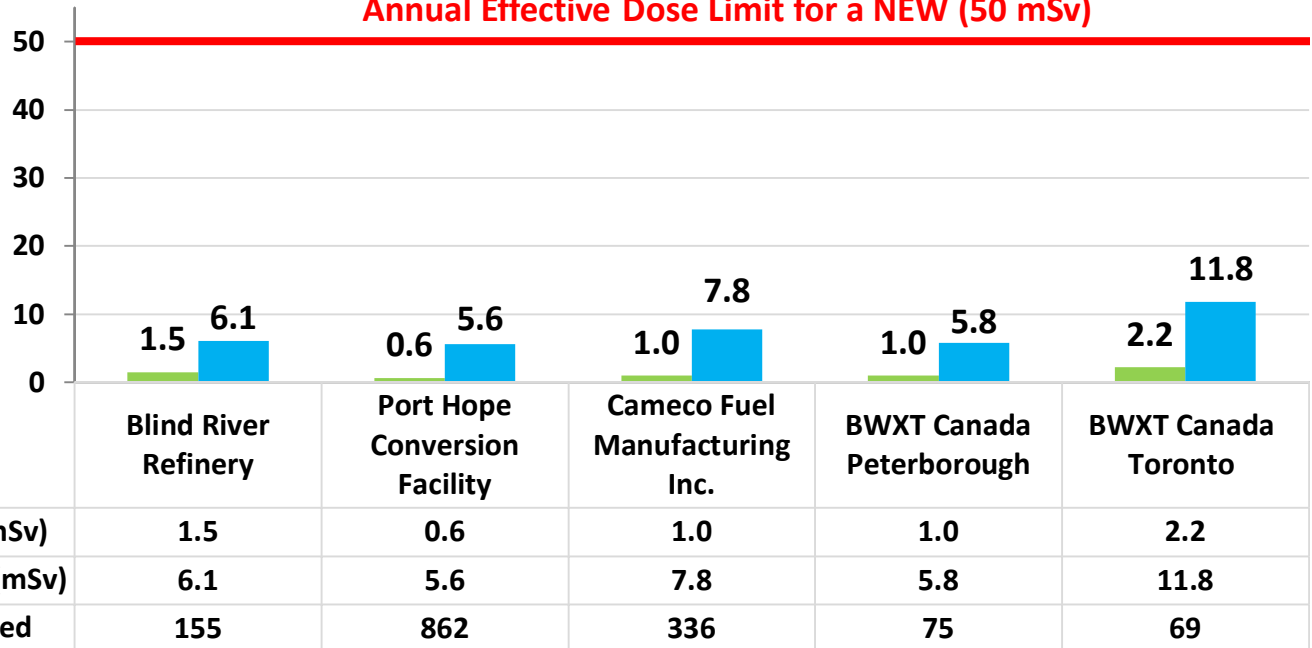


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## Radiation Protection 2016 Average and Maximum Effective Doses to Nuclear Energy Workers (NEWs)

Dose (mSv)

Annual Effective Dose Limit for a NEW (50 mSv)





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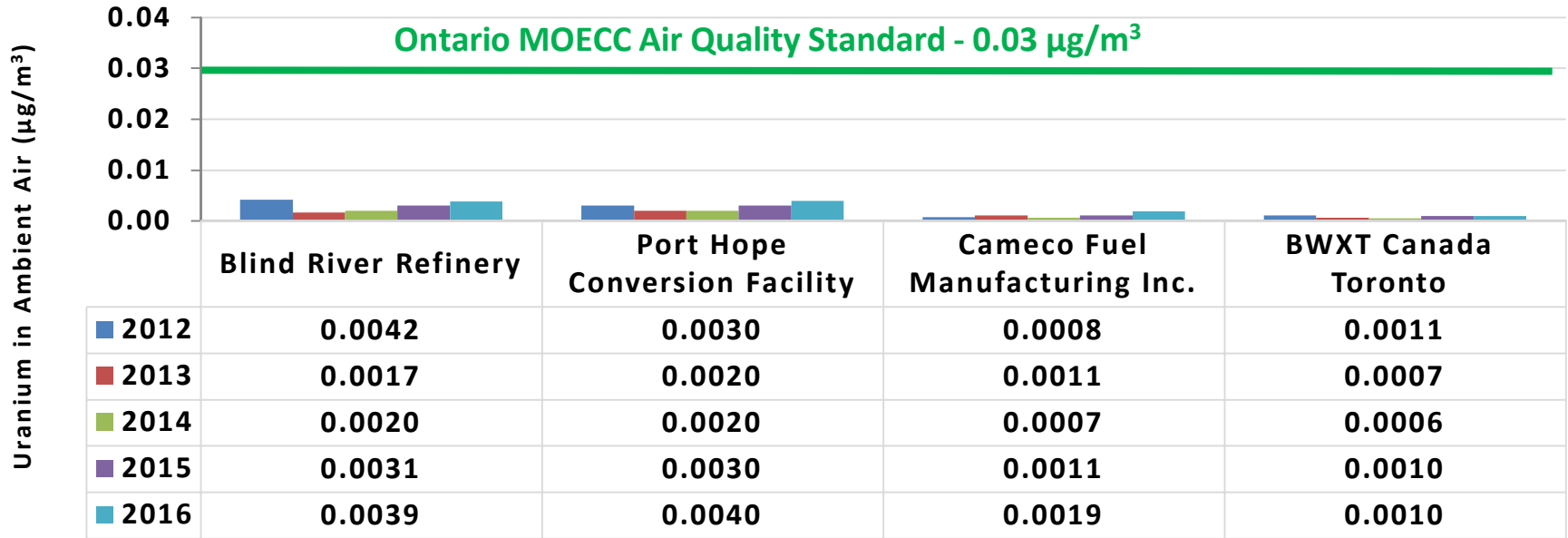
## Uranium Processing Facilities Dose to Public 2012-2016 (mSv) – 5 Year Trend

Facility	Year					Regulatory limit
	2012	2013	2014	2015	2016	
Blind River Refinery	0.012	0.012	0.005	0.005	0.005	1 mSv/year
Port Hope Conversion Facility	0.029	0.021	0.012	0.006	0.020	
Cameco Fuel Manufacturing	0.031	0.013	0.018	0.025	0.023	
BWXT Toronto	0.0011	0.0006	0.0055	0.010	0.0007	
BWXT Peterborough	<0.001	<0.001	<0.001	<0.001	<0.001	



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# Environmental Protection Uranium in Ambient Air – 5 Year Trend



Note: BWXT Peterborough does not conduct ambient air monitoring as emissions at the point of release are already below the Ontario Ministry of the Environment and Climate Change (MOECC) air quality standard for uranium.

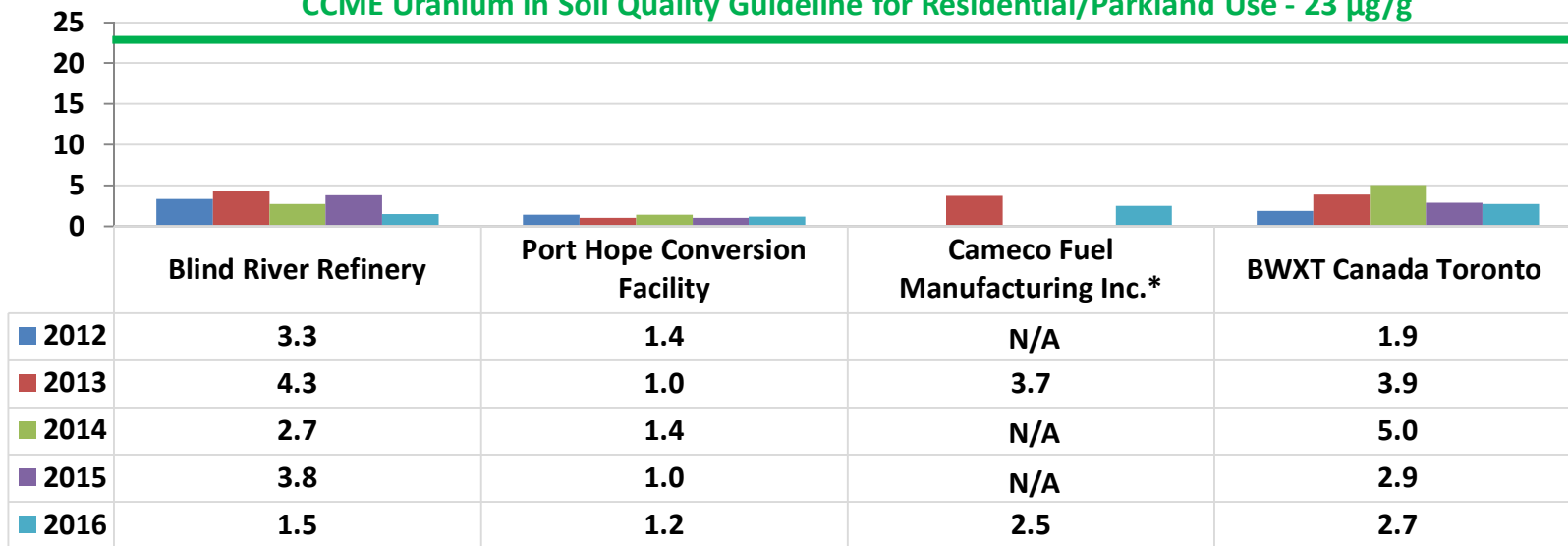


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# Environmental Protection Uranium Concentrations in Soil – 5 Year Trend

CCME Uranium in Soil Quality Guideline for Residential/Parkland Use - 23 µg/g

Uranium Concentration in Soil (µg/g)



\*Cameco Fuel Manufacturing samples soil on a 3 year frequency

Notes: Soil monitoring is not warranted at BWXT Peterborough due to extremely low stack emissions.

CCME refers to the Canadian Council of Ministers of the Environment



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## Conventional Health and Safety Lost Time Injuries (LTIs) – 5 Year Trend

Facility	2012	2013	2014	2015	2016
Blind River Refinery	0	0	0	0	0
Port Hope Conversion Facility	1	0	1	2	3
Cameco Fuel Manufacturing Inc.	0	0	0	1	0
BWXT Toronto and Peterborough	1	0	1	0	0

**CNSC staff reviewed and accepted corrective actions  
taken by licensees**



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# BLIND RIVER REFINERY



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# Uranium Processing Facilities Cameco Blind River Refinery (BRR)



The Blind River Refinery facility is located about 5 kilometers to the west of Blind River, Ontario on Lake Huron.

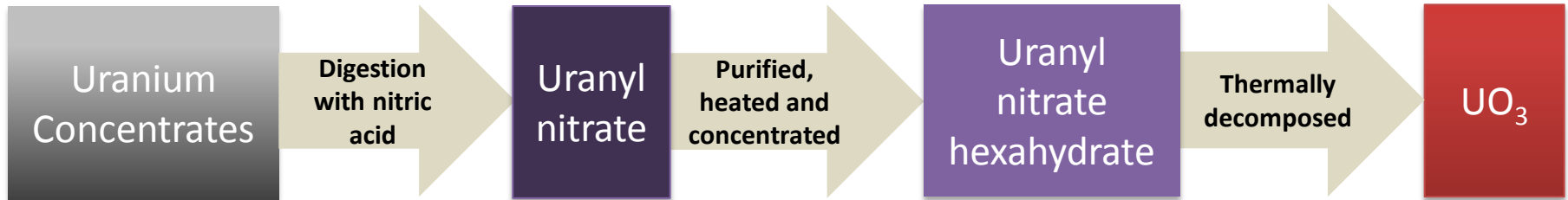
Photo source: Cameco



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## Facility Highlights Cameco Blind River Refinery

- Refines uranium concentrates (yellowcake) received from uranium mines worldwide to produce uranium trioxide ( $\text{UO}_3$ )







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## Facility Highlights Cameco Blind River Refinery

- No changes to facility operations in 2016
- No changes to the licence condition handbook in 2016
- $UO_3$  plant had scheduled shutdowns for planned maintenance
- Facility was maintained according to the licensing basis



$UO_3$  tote bin loading and handling station at the Blind River Refinery.

Photo source: Cameco



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## Community Highlights Cameco Blind River Refinery

- In February 2016, CNSC staff met with Mississauga First Nation (MFN) to discuss MFN's air quality sampling program
- In July 2016, CNSC staff met with MFN representatives to develop an IEMP sampling plan that included MFN lands
- CNSC Participant Funding Program used to fund meetings
- IEMP sampling around Blind River Refinery conducted in October 2017



CNSC staff conducting air sampling outside of the Mississauga First Nation Daycare.

Photo source: CNSC



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## Safety Performance Highlights Cameco Blind River Refinery

- No regulatory limits exceeded
  - no radiation protection action levels exceeded
  - no environmental action levels exceeded
- No lost time injuries
  - none in the past 10 years



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## Safety Performance Highlights Cameco Blind River Refinery

- CNSC staff are satisfied that in 2016, Cameco:
  - adequately controlled radiation exposures, keeping doses ALARA
  - adequately controlled environmental releases to protect the environment
  - continued to protect workers with a highly effective conventional health and safety program
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that Cameco continues to protect the health and safety of workers and the environment**



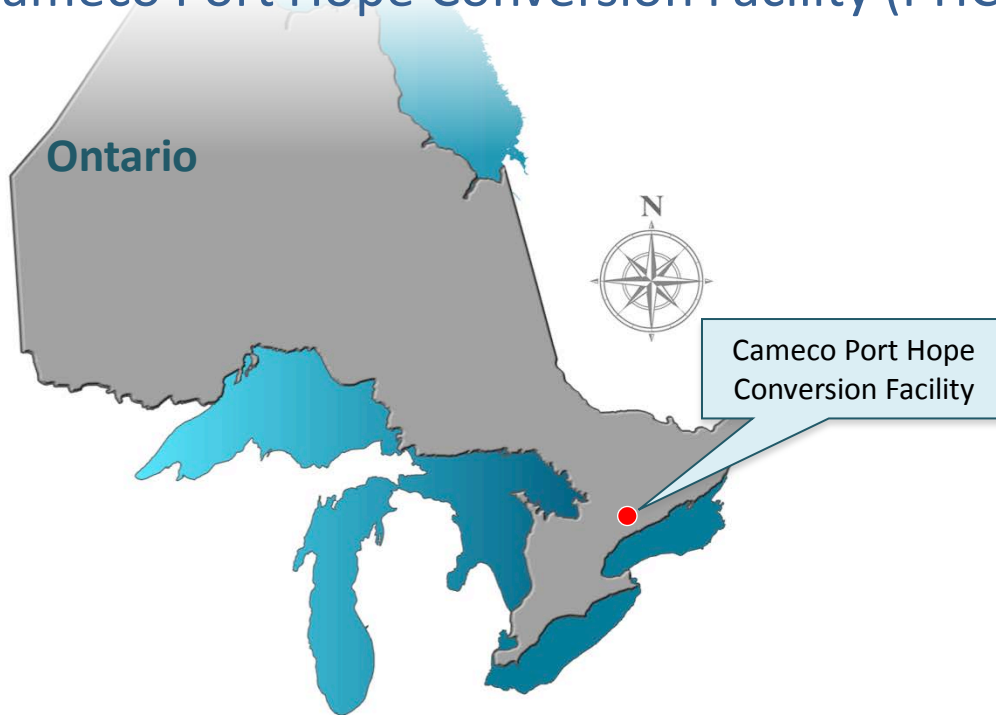
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# PORT HOPE CONVERSION FACILITY



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## Uranium Processing Facilities Cameco Port Hope Conversion Facility (PHCF)



Port Hope Conversion Facility is situated on the north shore of Lake Ontario, approximately 100 kilometers east of Toronto.

Photo source: Cameco

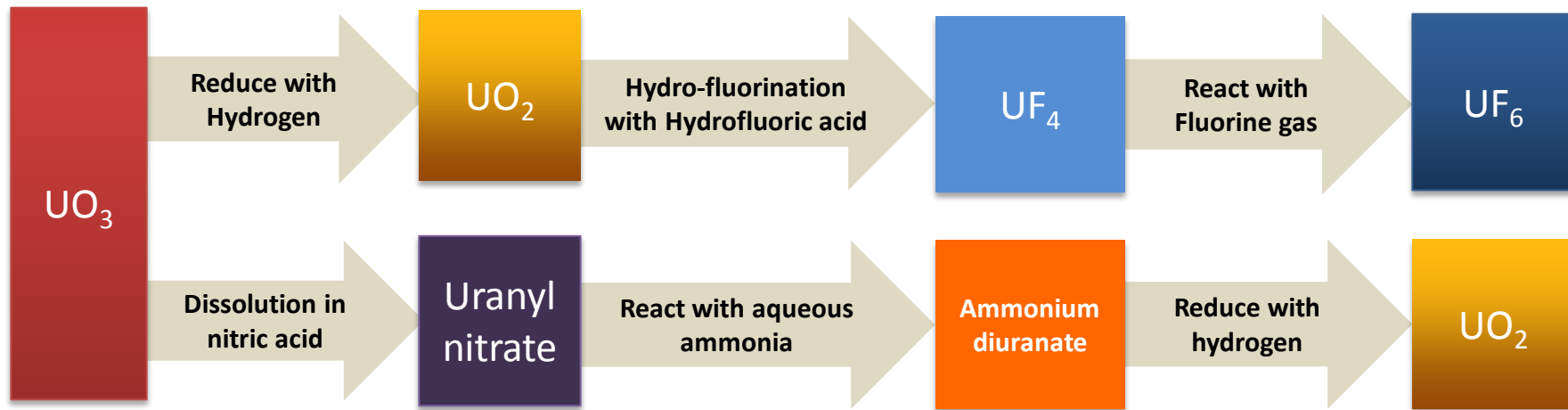


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## Facility Highlights

# Cameco Port Hope Conversion Facility

- Converts  $\text{UO}_3$  powder produced by Cameco's Blind River Refinery into uranium dioxide ( $\text{UO}_2$ ) and uranium hexafluoride ( $\text{UF}_6$ )







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## Facility Highlights Cameco Port Hope Conversion Facility

- No changes to facility operations in 2016
- No changes to the licence condition handbook in 2016
- The  $\text{UO}_2$  and  $\text{UF}_6$  plants had scheduled shutdowns for planned maintenance
- Facility was maintained according to the licensing basis



Port Hope Conversion Facility worker performing visual check on  $\text{UO}_2$  inside rotary kiln.

Photo source: Cameco





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## Facility Highlights

# Cameco Port Hope Conversion Facility

- Commission public hearing for licence renewal held in the Municipality of Port Hope, Ontario on November 8-9, 2016
- 44 interventions
- Commission renewed the PHCF operating licence for a period of 10 years (from March 2017 to February 2027)



Commission hearing in Port Hope, November 2016.

Photo source: CNSC



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## Facility Highlights

# Cameco Port Hope Conversion Facility

- Vision in Motion (VIM) project is progressing
  - clean-up and demolition of old and underused buildings
  - removal of contaminated soils, building materials and stored wastes
  - relocating historic waste from PHCF to the Port Hope Area Initiative Long Term Waste Management Facility
- Cameco is working closely with Canadian Nuclear Laboratories



Demolition of building 42 on the Centre Pier.  
Photo source: Cameco



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## Safety Performance Highlights Cameco Port Hope Conversion Facility

- No regulatory limits exceeded
  - no radiation protection action levels exceeded
  - no environmental action levels exceeded
- Three lost-time injuries
  - finger crushed during steel cutting
  - broken bone in leg after rolling on ankle
  - sprained ankle while turning from standing position
  - CNSC staff accepted Cameco's corrective actions



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## Commission Update

# Cameco Port Hope Conversion Facility

- Release limit of 275µg/L (monthly average) for uranium discharges from the sanitary sewer was implemented in 2017

(Paragraph 91 of Commission Record of Decision, *Application to renew the Nuclear Fuel Facility Operating Licence for the Port Hope Conversion Facility*, February 27, 2017)

- Commission requested that CNSC staff report on the status of Cameco's public disclosure of data on contaminants of concern

(Paragraph 14 of Commission Record of Decision, *Application to renew the Nuclear Fuel Facility Operating Licence for the Port Hope Conversion Facility*, February 27, 2017)

- Cameco submission to CNSC on this action due December 31, 2017
- CNSC staff will provide an update to the Commission next year



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## Commission Update

# Cameco Port Hope Conversion Facility

- On September 22, 2017 CNSC staff completed the review of Cameco's self-assessment of fish impingement and entrainment studies

(Paragraph 161 of Commission Record of Decision, *Application to renew the Nuclear Fuel Facility Operating Licence for the Port Hope Conversion Facility*, February 27, 2017)

- CNSC staff conclude that a Paragraph 35(2)(b) *Fisheries Act* authorization for *serious harm to fish* is not required:
  - mitigation measures in place effectively reduce fish impingement and the potential effects to local fish populations in the vicinity of the facility
  - both the intake screening and the reduced intake velocity (<15 cm/s) work to effectively reduce fish impingement when screening panels are installed and maintained properly
- Fisheries and Oceans Canada agree with CNSC staff



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## Commission Update for 2017 Cameco Port Hope Conversion Facility

- CNSC Administrative Monetary Penalty (AMP)
  - issued in September 2017 for non-compliance with Cameco's management system in May 2017
  - Cameco has requested Commission review of the AMP

**Commission review scheduled for March 2018**



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## Safety Performance Highlights Cameco Port Hope Conversion Facility

- CNSC staff are satisfied that in 2016, Cameco:
  - adequately controlled radiation exposures, keeping doses ALARA
  - adequately controlled environmental releases to protect the environment
  - continued to protect workers with its conventional health and safety program
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that Cameco continues to protect the health and safety of workers and the environment**



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# CAMECO FUEL MANUFACTURING





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# Uranium Processing Facilities Cameco Fuel Manufacturing (CFM)



Cameco Fuel Manufacturing facility is located  
in Port Hope, Ontario.

Photo source: Cameco



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## Facility Highlights Cameco Fuel Manufacturing

- Manufactures nuclear reactor fuel bundles from uranium dioxide ( $\text{UO}_2$ ) and zirconium alloy (zircaloy) tubes





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## Facility Highlights Cameco Fuel Manufacturing

- No changes to facility operations in 2016
- No changes to the licence condition handbook in 2016
- CFM had scheduled shutdowns for planned maintenance
- Facility was maintained according to the licensing basis



A CFM worker performing a final inspection on a fuel bundle prior to packaging.

Photo source: Cameco



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## Safety Performance Highlights Cameco Fuel Manufacturing

- No regulatory limits exceeded
  - no radiation protection action levels exceeded
  - one environmental action level exceeded
- No lost time injuries



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## Safety Performance Highlights Cameco Fuel Manufacturing

- One environmental action level exceeded – stack emissions

Date	Measured Value ( $\mu\text{g U}/\text{m}^3$ )	Daily Action Level ( $\mu\text{g U}/\text{m}^3$ )
September 2016	9.52	2.0

- Total annual release (0.03 kg U/year) was well below licence limit (14 kg U/year)
- CNSC staff reviewed Cameco's investigation and corrective actions, and found them to be acceptable



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## Safety Performance Highlights Cameco Fuel Manufacturing

- CNSC staff are satisfied that in 2016, Cameco:
  - adequately controlled radiation exposures, keeping doses ALARA
  - adequately controlled environmental releases to protect the environment
  - continued to protect workers with its conventional health and safety program
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that Cameco continues to protect the health and safety of workers and the environment**



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# BWXT NUCLEAR ENERGY CANADA





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# Uranium Processing Facilities BWXT Nuclear Energy Canada Toronto and Peterborough



BWXT has two sites in Ontario, one in Toronto (top photo) and one in Peterborough (bottom photo).

Photo source: BWXT, Google





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## Facility Highlights BWXT Toronto and Peterborough

- Toronto facility produces natural and  $UO_2$  pellets for nuclear fuel bundles
- Peterborough facility produces and tests nuclear fuel bundles, and is authorized to receive, repair, modify and return contaminated equipment from offsite nuclear facilities





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## Facility Highlights BWXT Toronto and Peterborough

- BWXT Canada Ltd. announced its acquisition of GE-Hitachi Nuclear Energy Canada Inc. (GEH-C) in August 2016
- Commission approved the transfer of GEH-C's operating licence to BWXT in December 2016
- Commission also approved a new financial guarantee of \$52,371,600
- No changes to facility operations in 2016



BWXT buildings in Toronto (top) and Peterborough (bottom).

Photo source: BWXT



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## Safety Performance Highlights BWXT Toronto and Peterborough

- No regulatory limits exceeded
  - one radiation protection action level exceeded
  - no environmental action levels exceeded
- No lost time injuries



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## Safety Performance Highlights BWXT Toronto and Peterborough

- One radiation protection action level exceeded at BWXT Toronto

Date	Value ( $\mu\text{g U/L}$ )	Weekly Action Level ( $\mu\text{g U/L}$ )	Committed effective dose to worker (mSv)	Annual Dose Limit (mSv/year)
April 2016	13	10	0.2	50

- CNSC staff reviewed BWXT's investigation and corrective actions, and found them to be acceptable



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## Safety Performance Highlights BWXT Toronto and Peterborough

- CNSC staff are satisfied that in 2016, BWXT:
  - adequately controlled radiation exposures, keeping doses ALARA
  - adequately controlled environmental releases to protect the environment
  - continued to protect workers with its conventional health and safety program
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that BWXT continues to protect the health and safety of workers and the environment**



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# NUCLEAR SUBSTANCE PROCESSING FACILITIES



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# Nuclear Substance Processing Facilities

Facility	Licence Expiry	Financial Guarantee (approx.)
SRB Technologies (Canada) Inc.	June 2022	\$0.65M
Nordion (Canada) Inc.	October 2025	\$45.1M
Best Theratronics Ltd.	June 2019	\$1.8





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# Nuclear Substance Processing Facilities Regulatory Oversight in 2016

	SRB Technologies (Canada) Inc.	Nordion (Canada) Inc.	Best Theratronics Ltd.	Totals
Person Days for Licensing	11	10	2	<b>23</b>
Person Days for Compliance	102	208	74	<b>384</b>
Number of Inspections	1	3	4	<b>8</b>
Inspection Action Items	1	7	13	<b>21</b>
12(2) Requests for Information	1	1	1	<b>3</b>
Orders	0	0	0	<b>0</b>
Administrative Monetary Penalties (AMPs)	0	0	0	<b>0</b>





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# Nuclear Substance Processing Facilities Performance Ratings 2016

FS = Fully Satisfactory  
SA = Satisfactory  
BE = Below Expectations  
UA = Unacceptable  
NA = Not Applicable

Safety and Control Area	SRB Technologies (Canada) Inc.	Nordion (Canada) Inc.	Best Theratronics Ltd.
Management System	SA	SA	SA
Human Performance Management	SA	SA	SA
Operating Performance	SA	SA	SA
Safety Analysis	SA	SA	SA
Physical Design	SA	SA	SA
Fitness for Service	FS	SA	SA
Radiation Protection	SA	SA	SA
Conventional Health and Safety	FS	SA	SA
Environmental Protection	SA	FS	SA
Emergency Management and Fire Protection	SA	SA	SA
Waste Management	SA	SA	SA
Security	SA	FS	SA
Safeguards and Non-Proliferation	N/A	SA	SA
Packaging and Transport	SA	SA	SA

### Fully Satisfactory:

- Safety and control measures are highly effective
- Exceeds requirements and CNSC expectations
- Compliance is stable or improving

### Satisfactory:

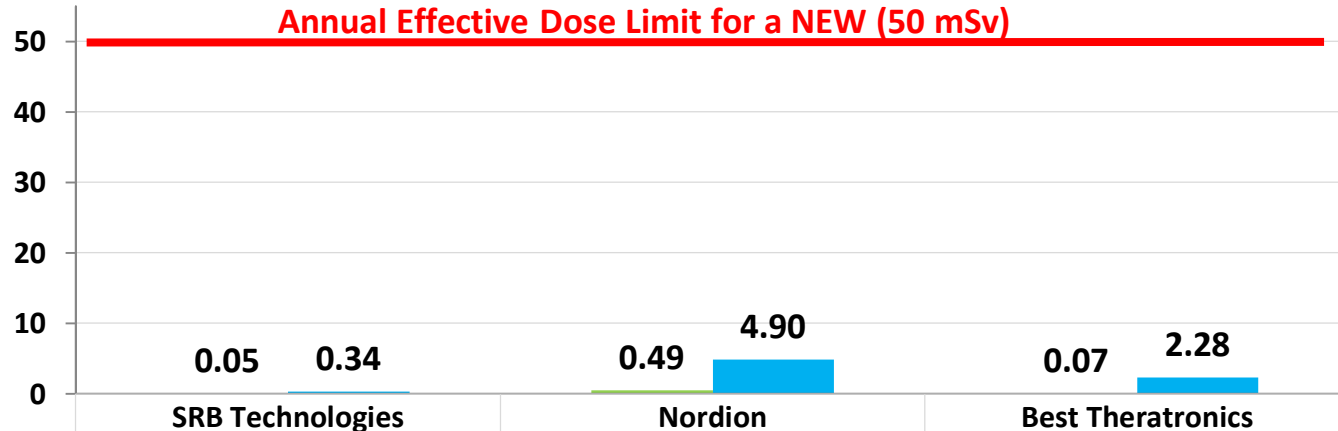
- Safety and control measures are sufficiently effective
- Meets requirements and CNSC expectations
- Improvements planned



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# Radiation Protection 2016 Average and Maximum Effective Doses to Nuclear Energy Workers (NEWs)

Dose (mSv)



	SRB Technologies	Nordion	Best Theratronics
Average effective dose (mSv)	0.05	0.49	0.07
Maximum effective dose (mSv)	0.34	4.90	2.28
Number of NEWs monitored	45	267	69



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## Nuclear Substance Processing Facilities Dose to Public 2012-2016 (mSv) – 5 Year Trend

Facility	Year					Regulatory limit
	2012	2013	2014	2015	2016	
<b>SRB Technologies</b>	0.0049	0.0068	0.0067	0.0068	0.0046	<b>1 mSv/year</b>
<b>Nordion</b>	0.020	0.022	0.010	0.0056	0.0021	
<b>Best Theratronics</b>	N/A	N/A	N/A	N/A	N/A	

N/A = Not Applicable

Public dose estimates are not provided for Best Theratronics Ltd. because its licensed activities involve sealed sources and there are no discharges to the environment.



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## Conventional Health and Safety Lost Time Injuries (LTIs) – 5 Year Trend

Facility	2012	2013	2014	2015	2016
SRB Technologies	0	0	0	0	0
Nordion	0	1	3	0	3
Best Theratronics	N/A	N/A	1	1	3

N/A = Not Applicable

Best Theratronics was not required to report LTI statistics prior to 2014 under its previous licence.

**CNSC staff reviewed and accepted corrective actions  
taken by licensees**



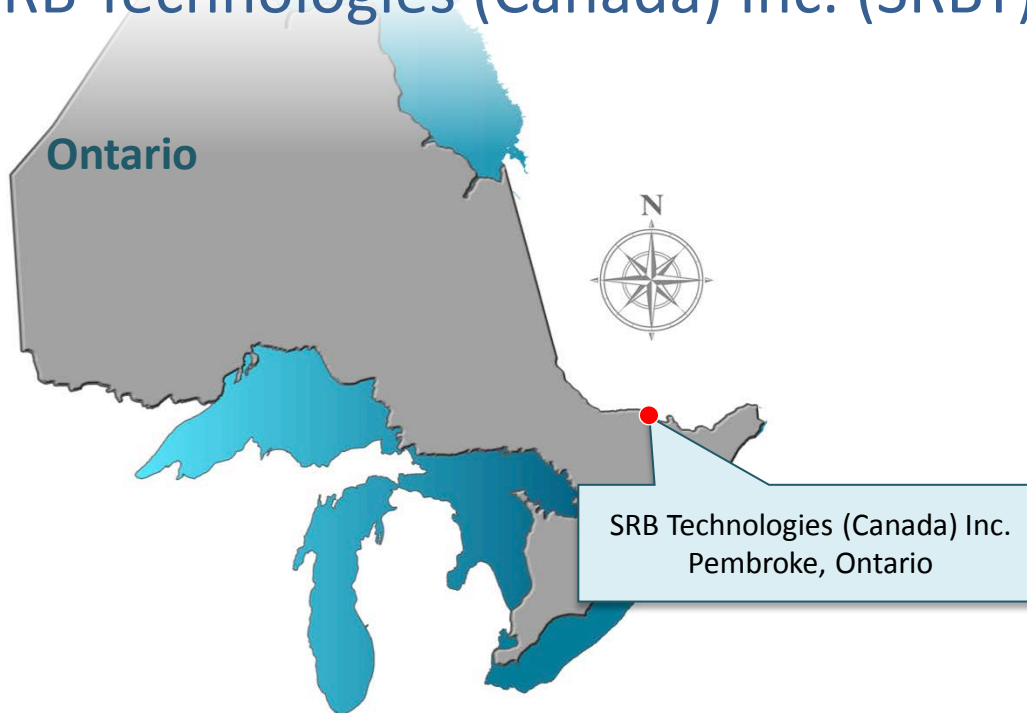
Commission Meeting, December 13, 2017  
CMD 17-M45.A

# SRB TECHNOLOGIES (CANADA) INC.



Commission Meeting, December 13, 2017  
CMD 17-M45.A

## Nuclear Substance Processing Facilities SRB Technologies (Canada) Inc. (SRBT)



Aerial view of SRB Technologies. SRBT is a gaseous tritium light source manufacturing facility located in Pembroke, Ontario.

Photo source: SRB Technologies



Commission Meeting, December 13, 2017  
CMD 17-M45.A

## Facility Highlights SRB Technologies

- Processes tritium gas to produce gaseous tritium light sources (GTLS)
- Manufactures radiation devices that contain GTLS

### Types of Radiation Devices



Exit Signs



Aircraft Signs



Safety Markers



Raw Light Sources



Safety Signs



Tactical Devices

Photo source: SRB Technologies



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CMD 17-M45.A

## Facility Highlights SRB Technologies

- No changes to facility operations in 2016
- No changes to the licence condition handbook in 2016
- Facility was maintained according to the licensing basis



CNSC staff inspecting stacks at SRB  
Technologies  
Photo source: CNSC





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## Commission Update Quantity of Tritium Processed

Type	Activity (GBq)	# of Shipments
Outgoing	28,122,678	1,001
Returned	6,737,000	562
Waste	6,656,630	10

- The majority of returned devices are sent to Chalk River Laboratories
- A small number are reused in other applications



Bulk stack real time display with visual and audible alarm.

Photo source: CNSC



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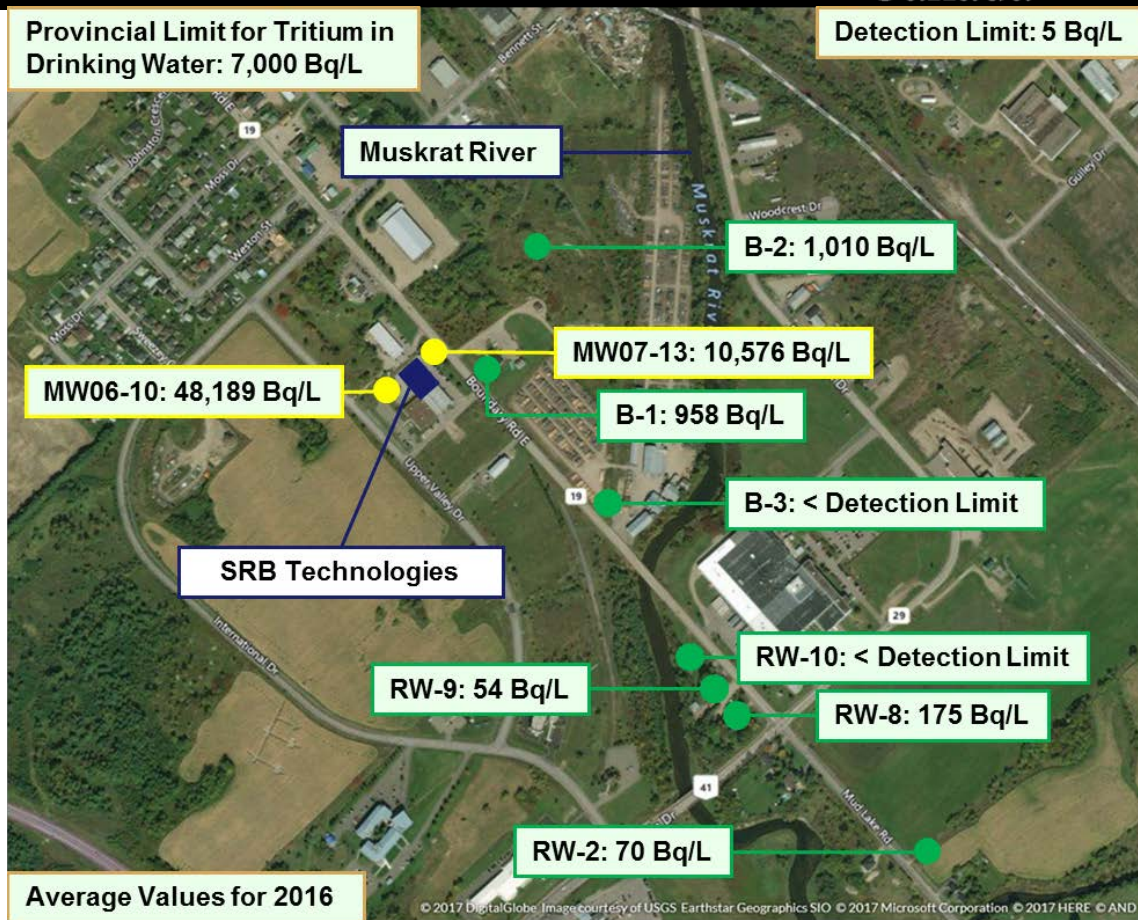
## Commission Update Tritium Concentrations In Groundwater (2016)

- Elevated tritium concentrations originated from past operations
- Low values near and in Muskrat river and residential areas
- Concentration pattern is consistent with predictions
- Tritium levels surrounding the facility are expected to decrease over time

**Public and environment remain protected**

Provincial Limit for Tritium in Drinking Water: 7,000 Bq/L

Detection Limit: 5 Bq/L

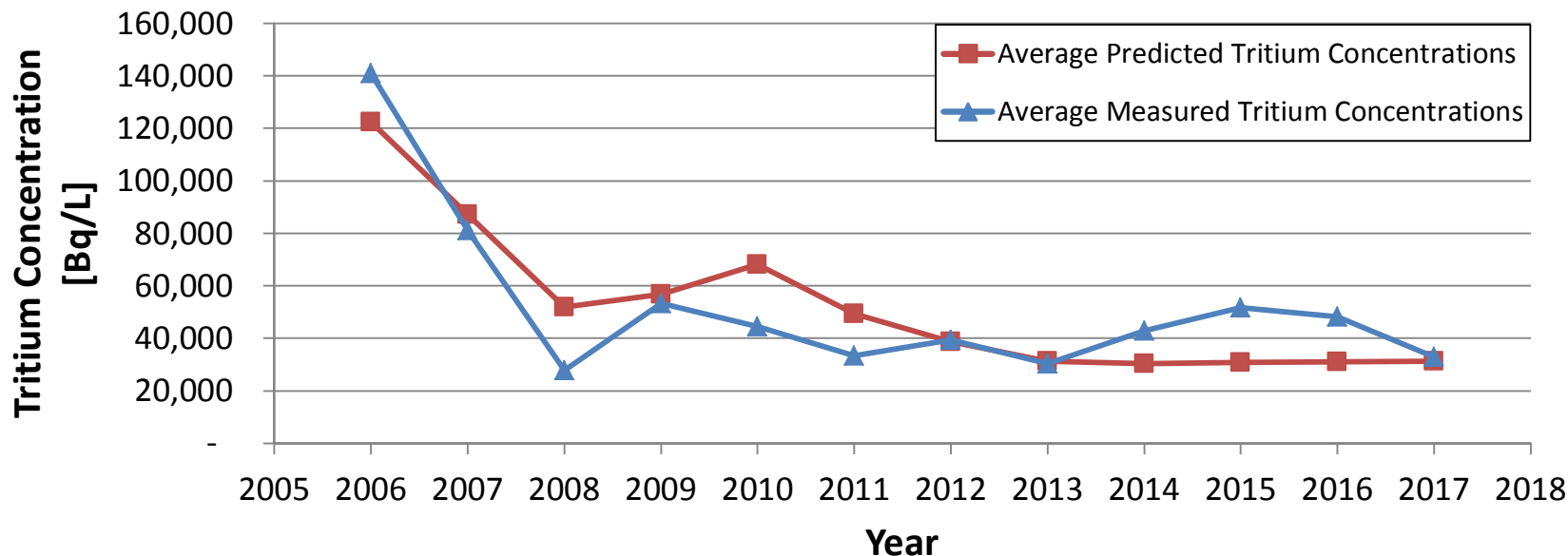




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### Commission Update

## Tritium Concentrations In Groundwater (2006-present) for MW06-10\*



\*MW06-10 is a monitoring well situated on the SRBT premises

Note: This graph was first presented by CNSC staff in SRBT's relicensing Commission Hearing CMD 15-H5.A, *SRB Technologies (Canada) Inc. 2015 Licence Renewal*, May 14, 2015.



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CMD 17-M45.A

## Safety Performance Highlights SRB Technologies

- No regulatory limits exceeded
  - no radiation protection action levels exceeded
  - no environmental action levels exceeded
- No lost time injuries



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CMD 17-M45.A

## Safety Performance Highlights SRB Technologies

- CNSC staff are satisfied that in 2016, SRBT:
  - adequately controlled radiation exposures, keeping doses ALARA
  - adequately controlled environmental releases to protect the environment
  - continued to protect workers with a highly effective conventional health and safety program
  - continued to implement a highly effective maintenance program
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that SRBT continues to protect the health and safety of workers and the environment**



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CMD 17-M45.A

# NORDION (CANADA) INC.





Commission Meeting, December 13, 2017  
CMD 17-M45.A

## Nuclear Substance Processing Facilities Nordion (Canada) Inc.



The Nordion (Canada) Inc. facility located in  
Ottawa, Ontario is highlighted in red.

Photo source: Bing Maps



Commission Meeting, December 13, 2017  
CMD 17-M45.A

## Facility Highlights Nordion

- Manufactures sealed radiation sources (cobalt-60) for medical and industrial applications
- Processes unsealed radioisotopes (such as iodine-131) for health and life sciences applications



Nordion personnel working with a hot cell manipulator.

Photo source: Nordion

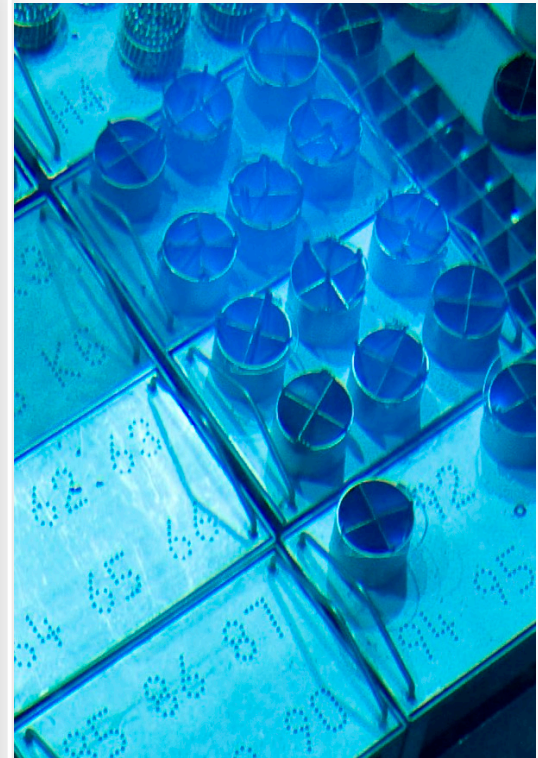




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## Facility Highlights Nordion

- Effective October 31, 2016, Nordion made the business decision to cease production and sale of iodine-125, iodine-131 and xenon-133
  - no impact to Nordion's environment, health and safety programs
- No changes to the licence condition handbook in 2016
- Facility was maintained according to the licensing basis



Co-60 storage pool at Nordion.  
Photo source: Nordion



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CMD 17-M45.A

## Safety Performance Highlights Nordion

- No regulatory limits exceeded
  - no radiation protection action levels exceeded
  - no environmental action levels exceeded
- Three lost time injuries
  - allergic reaction to wasp stings
  - low back injury from a slip while wearing shoe covers
  - shoulder injury from overexertion while loosening a screw cap
  - CNSC staff accepted Nordion's corrective actions



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CMD 17-M45.A

## Safety Performance Highlights Nordion

- CNSC staff are satisfied that in 2016, Nordion:
  - adequately controlled radiation exposures, keeping doses ALARA
  - highly effectively controlled environmental releases to protect the environment
  - continued to protect workers with its conventional health and safety program
  - continued to implement a security program that exceeds requirements
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that Nordion continues to protect the health and safety of workers and the environment**



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# BEST THERATRONICS LTD.



Commission Meeting, December 13, 2017  
CMD 17-M45.A

# Nuclear Substance Processing Facilities Best Theratronics Ltd. (BTL)



The Best Theratronics Ltd. facility located in  
Ottawa, Ontario is highlighted in red.

Photo source: Bing Maps



Commission Meeting, December 13, 2017  
CMD 17-M45.A

## Facility Highlights Best Theratronics Ltd.

- Manufactures medical equipment, including cobalt-60 (Co-60) radiation therapy units and cesium-137 (Cs-137) blood irradiators
- No changes to facility operations
- No changes to the licence condition handbook in 2016
- Facility was maintained according to the licensing basis



Image of a teletherapy machine manufactured by Best Theratronics Ltd.

Photo source: Best Theratronics Ltd



Commission Meeting, December 13, 2017  
CMD 17-M45.A

## Commission Update Best Theratronics Ltd.

- August 24, 2015: CNSC Designated Officer issued an order to Best Theratronics for being non-compliant with the financial guarantee licence condition
- Best Theratronics reduced its inventory of nuclear substances, and submitted a revised preliminary decommissioning plan and cost estimate of \$1.8 million
- July 14, 2017: the Commission accepted the revised financial guarantee

**Best Theratronics is in compliance with its financial  
guarantee licence condition**



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CMD 17-M45.A

## Safety Performance Highlights Best Theratronics Ltd.

- No regulatory limits exceeded
  - no radiation protection action levels exceeded
- Three Lost Time Injuries
  - thumb injury while trying to lift heavy equipment
  - finger injury from dropped steel part
  - broken wrist from fall
  - CNSC staff accepted BTL's corrective actions





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CMD 17-M45.A

## Safety Performance Highlights Best Theratronics Ltd.

- CNSC staff are satisfied that in 2016, BTL:
  - adequately controlled radiation exposures, keeping doses ALARA
  - effectively controlled environmental releases to protect the environment
  - continued to protect workers with its conventional health and safety program
  - continued to effectively implement programs in support of other SCAs to ensure the protection of the health and safety of workers, the public and the environment

**CNSC staff are satisfied that BTL continues to protect the health and safety  
of workers and the environment**



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# PARTICIPANT FUNDING AND INTERVENTIONS



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CMD 17-M45.A

## Participant Funding Program (PFP) and Interventions

- Total PFP reimbursement of up to \$32,055 approved to the following recipients:
  - Lake Ontario Waterkeeper (LOW), CMD 17-M45.2
  - Northwatch (NW), CMD 17-M45.3
  - Algonquins of Ontario (AOO), CMD 17-M45.4
- A total of four written interventions received
  - All three PFP recipients
  - Canadian Nuclear Workers' Council, CMD 17-M45.1



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CMD 17-M45.A

## Key Themes in Interventions

- Availability of reference documents
- Waste management
- Release limits vs. actual emissions
- Liquid discharges at uranium processing facilities
- Engagement with Indigenous communities
- Recommendations to improve future Regulatory Oversight Reports



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CMD 17-M45.A

## Availability of Reference Documents

Comment: “The majority of Northwatch’s documentary disclosure requests were denied by the CNSC” (NW, CMD 17-M45.3, page 7)

CNSC staff response:

- CNSC staff provided copies of licences and licence condition handbooks
- Scope of Northwatch’s request was beyond annual performance review
  - Northwatch requested over 30 documents - the majority were licensee documents
- Northwatch was directed to seek licensee documents from licensees
  - CNSC staff encouraged licensees to accommodate request to the extent possible
- Licensees’ annual compliance reports are available on their websites



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CMD 17-M45.A

## Waste Management

Comment: Northwatch recommends that ROR include a dedicated section on waste management (NW, CMD 17-M45.3, page 6)

CNSC staff response:

- Approach to ROR is to focus on radiation protection, environmental protection, and conventional health and safety SCAs; other SCAs are addressed as needed
- Licensee annual compliance reports include details on waste management and are available to the public
- Canada comprehensively report on waste management through the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*
- CNSC staff do not agree with intervenor's recommendation



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CMD 17-M45.A

## Release Limits vs. Actual Emissions

Comment: Release limits should be revised based on actual releases from the facilities (LOW, CMD 17-M45.2, Recommendation 10; NW, CMD 17-M45.3, throughout intervention)

CNSC staff response:

- Licence limits are either
  - technology-based in accordance with an approved design or
  - exposure-based to meet site-specific criteria in the environment
- Licensees base action levels on operating performance and review them regularly
- CNSC staff are developing an environmental protection regulatory document to standardize the setting of release limits

**Licence limits are protective of the public and the environment**



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CMD 17-M45.A

# Liquid Discharges from Uranium Processing Facilities

Comment: Standardization and expansion of monitoring and reporting of liquid discharges for uranium processing facilities (LOW, CMD 17-M45.2, Recommendations 1, 3, 4, 7, 8)

CNSC staff response:

- Existing programs are protective of the environment
- Future improvements include implementation of:
  - CSA standards for effluent and environmental monitoring (expected in 2018)
  - Draft CNSC regulatory document 3.1.2, *Reporting Requirements for Non-Power Reactor Class I Facilities and Uranium Mines and Mills*, with standardized reporting requirements (anticipated in 2018)
  - modernized stormwater management at PHCF as part of VIM (as per project timelines)





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CMD 17-M45.A

# Engagement with Indigenous Communities

Comment: Request for meaningful participation and engagement opportunities (AOO, CMD 17-M45.4, throughout intervention)

CNSC staff response:

- CNSC staff are committed to continued, meaningful, structured and formalized engagement with Algonquins of Ontario and other Indigenous groups
- CNSC staff will explore opportunities for Indigenous groups' participation in IEMP, as appropriate
- Licensees are expected to develop and improve public information programs and aboriginal outreach based on stakeholder feedback



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## Recommendations for Future Regulatory Oversight Reports

Comment: Opportunities to improve the Regulatory Oversight Report have been identified (LOW, CMD 17-M45.2, throughout intervention; NW, CMD 17-M45.3, throughout intervention)

CNSC staff response:

- CNSC staff will review intervenor comments and determine which are feasible and within the scope of the ROR, such as
  - summary table of events
  - monitoring results to include maximum and average values
  - expanded section on licensee public information and outreach programs



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# CONCLUSION



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## Conclusion (1/2)

### CNSC staff's regulatory oversight activities confirmed:

- Radiation protection programs at all facilities adequately controlled radiation exposures, keeping doses ALARA
- Environmental protection programs at all facilities were effective in protecting the environment
- Conventional health and safety programs at all facilities continue to protect workers
- Other programs in support of remaining SCAs required to ensure the protection of the health and safety of workers, the public and the environment continue to be effectively implemented



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## Conclusion (2/2)

CNSC staff's regulatory oversight activities confirmed:

- Each uranium and nuclear substance processing facility made adequate provision for the protection of the environment, the health and safety of persons, and Canada's international obligations in 2016



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## ANNEX – DISPOSITION OF INTERVENORS' COMMENTS



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CMD 17-M45.A

## Annex – Lake Ontario Waterkeeper (LOW), CMD 17-M45.2

Recommendation	CNSC Disposition	Additional Details
1 a – Storm water reporting at PHCF (CMD 17-M45.2, p. 4)	Cameco has committed to revise the PHCF’s environmental monitoring program to be compliant with CSA standards by the end of December 2017. Proposed changes to the program will be submitted to CNSC staff.	Cameco PHCF’s environmental monitoring program does include monitoring of storm water twice a year. Cameco has committed to revise the PHCF’s environmental monitoring program to be compliant with CSA standard N288.4-10 <i>environmental monitoring programs at class 1 nuclear facilities and uranium mines and mills</i> by the end of December 2017 (Reference: Paragraph 90 & 91 Commission Record of Decision February 27, 2017)
1b – Frequency of storm water monitoring at PHCF (CMD 17-M45.2, p. 4)	Previously addressed in 2016 PHCF re-licensing. LOW recommended this in CMD 16-H8.38. Cameco has committed to revise the PHCF’s environmental monitoring program to be compliant with CSA standards by the end of December 2017. Proposed changes to the program will be submitted to CNSC staff.	Cameco PHCF’s environmental monitoring program does include monitoring of storm water twice a year. Cameco has committed to revise the PHCF’s environmental monitoring program to be compliant with CSA standard N288.4-10 <i>environmental monitoring programs at class 1 nuclear facilities and uranium mines and mills</i> by the end of December 2017. This program update will include storm water monitoring (Reference: Paragraph 90 & 91 Commission Record of Decision February 27, 2017)
1c – Parameters analyzed in storm water at PHCF (CMD 17-M45.2, p. 4)	Previously addressed in 2016 PHCF re-licensing. LOW recommended this in CMD 16-H8.38. Cameco has committed to revise the PHCF’s environmental monitoring program to be compliant with CSA standards by the end of December 2017. Proposed changes to the program will be submitted to CNSC staff.	Cameco PHCF’s environmental monitoring program does include monitoring of storm water twice a year. Cameco has committed to revise the PHCF’s environmental monitoring program to be compliant with CSA standard N288.4-10 <i>environmental monitoring programs at class 1 nuclear facilities and uranium mines and mills</i> by the end of December 2017. This program update will include COCs to be monitored (Reference: Paragraph 90 & 91 Commission Record of Decision February 27, 2017)
2 –Fisheries Act Review at PHCF made public (CMD 17-M45.2, p. 4)	CNSC staff agree with the recommendation and provided the information on November 28, 2017	





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## Annex – Lake Ontario Waterkeeper (LOW), CMD 17-M45.2

Recommendation	CNSC Disposition	Additional Details
<p>3 – Cameco PHCF quarterly or annual reports should contain all emissions (CMD 17-M45.2, p. 4)</p>	<p>Previously addressed in 2016 PHCF re-licensing. LOW recommended this in CMD 16-H8.38. Cameco PHCF has committed to revise the PHCF's environmental monitoring program to be compliant with CSA standard by the end of December 2017. Proposed changes to the program will be submitted to CNSC staff</p>	<p>The majority of this information is provided by Cameco in its annual reporting. Cameco PHCF has committed to revise the its s environmental monitoring program to be compliant with CSA standard N288.4-10 <i>environmental monitoring programs at class 1 nuclear facilities and uranium mines and mills</i> by the end of December 2017. CNSC staff will review to determine what information is required to be included in annual and quarterly report. (Reference: Paragraph 93 Commission Record of Decision February 27, 2017)</p>
<p>4 – Annual loadings from groundwater at PHCF (CMD 17-M45.2, p. 4)</p>	<p>Previously addressed in 2016 PHCF re-licensing. LOW recommended this in CMD 16-H8.38. Groundwater is captured and treated using groundwater wells and the existing wastewater treatment system through the evaporator. As a result there are no loadings to the harbor that are unaccounted for (Reference: Paragraph 92 Commission Record of Decision February 27, 2017)</p>	
<p>5 – Wastewater treatment plants for VIM activities at PHCF (CMD 17-M45.2, p. 4)</p>	<p>Previously addressed in 2016 PHCF re-licensing. LOW recommended this in CMD 16-H8.38. CNSC staff expect Cameco, in conjunction with the Port Hope Area Initiative and the Municipality of Port Hope, to keep the community engaged on VIM activities.</p>	<p>Any wastewater generated by VIM and collected in the pump and treat groundwater well system is to be treated in the existing wastewater treatment system through the evaporator. Cameco staff have indicated that the current evaporator system will be sufficient for handling VIM water (Reference: Paragraph 92 Commission Record of Decision February 27, 2017)</p>
<p>6 – Improvements to Cameco PHCF reporting (CMD 17-M45.2, p. 5)</p>	<p>Previously addressed in 2016 PHCF re-licensing. LOW recommended this in CMD 16-H8.38. Cameco is in compliance with RD/GD-99.3 <i>Public Information and Disclosure</i>.</p>	<p>RD/GD 99.3 outlines requirement for regular program evaluation and open dialogue with the public and target audiences. CNSC expects licensees to consider these recommendations to enhance or change how they provide information of interest.</p>



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## Annex – Lake Ontario Waterkeeper (LOW), CMD 17-M45.2

Recommendation	CNSC Disposition	Additional Details
7 – Updates to Cameco’s PHCF annual report (CMD 17-M45.2, p. 5)	Previously addressed in 2016 PHCF re-licensing. LOW recommended something similar to this in CMD 16-H8.38 (2016 PHCF re-licensing). Quarterly and annual compliance reports are tailored to CNSC requirements and focus on the elements that the CNSC regulates.	Cameco has committed to revise its effluent monitoring program to be compliant with CSA Standard N288.5-11 Effluent monitoring programs at Class 1 nuclear facilities and uranium mines and mills and CSA standard N288.4-10 <i>environmental monitoring programs at class 1 nuclear facilities and uranium mines and mills</i> by the end of December 2017. Proposed changes to the program will be submitted to CNSC staff to review and determine what information is required to be submitted in annual and quarterly reporting. (Reference: Paragraph 93 Commission Record of Decision February 27, 2017)
8 – Suggestions ROR improvements (CMD 17-M45.2, p. 5)	This information is presented on Slide 90.	
9 – Requirement for groundwater and surface water quality monitoring at PHCF (CMD 17-M45.2, p. 5)	The CNSC’s regulatory framework ensures that licensees have programs in place to protect the public, the environment and workers. Cameco’s programs demonstrate that the public, environment and workers are protected.	CNSC staff compliance activities verify the implementation of these programs. In the spirit of continuous improvement CNSC staff have required Cameco to implement a number of CSA standards to improve environmental monitoring. (Reference: Paragraph 90, 91, 93 93 & 95 Commission Record of Decision February 27, 2017)
10 – Review of licence limits (CMD 17-M45.2, p. 5)	This information is presented on Slide 87.	



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CMD 17-M45.A

# Annex – Northwatch (NW), CMD 17-M45.3

Recommendation	CNSC Disposition	Additional Details
<p>NW Recommendation, Licence Condition and Compliance – Less boilerplate statements in reporting and more in-depth licensee specific remarks (CMD 17-M45.3, p. 5)</p>	<p>CNSC staff do not accept the recommendation.</p>	<p>The facility sections in the ROR and the additional information in appendix F - Environmental Data address licensee compliance to their license and LCH requirements.</p>
<p>NW Recommendation, Consistency Among Calculations – Monitoring results averaging period (CMD 17-M45.3, p. 5)</p>	<p>CNSC staff do not accept the recommendation.</p>	<p>Licensees are required to monitor airborne emissions and liquid effluent at the frequency specified in their license limits. Action levels are in place and are designed to alert licensees before regulatory limits are reached. There were no incidents of release limits being exceeded at any of the facilities in the ROR in 2016. More detailed emission and effluent data are provided by licensees in their annual reporting.</p>
<p>NW Recommendation, Consistency Among Calculations – Include maximums alongside averages (CMD 17-M45.3, p. 5)</p>	<p>CNSC staff agree with the recommendation and will look to improve the 2017 ROR.</p>	<p>This information is provided by licensees in their annual reporting and can be included in future RORs.</p>



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## Annex – Northwatch (NW), CMD 17-M45.3

Recommendation	CNSC Disposition	Additional Details
<p>NW Recommendation, Tracking Pollution in Canada – Include radioactive substances on NPRI substance list and report emissions on NPRI substance list or a parallel process (CMD 17-M45.3, p. 6)</p>	<p>CNSC staff will be improving the availability of data. See additional details for more information.</p>	<p>CNSC staff have been in discussion with non-governmental organizations regarding the inclusion of radionuclides in National Pollutant Release Inventory (NPRI) reporting. CNSC staff acknowledge that the data does exist but that it is difficult to find. CNSC staff is putting in place a three-step process to improve the availability and standardize the data regarding radionuclide emissions from licensed facilities on the CNSC’s website. In 2018, all Regulatory Oversight Reports will have the total annual loading for the relevant radionuclides for that facility reported in an appendix.</p>
<p>NW Recommendation, Waste Management – Include waste management section in next ROR (CMD 17-M45.3, p. 6)</p>	<p>This information is presented on Slide 86.</p>	
<p>NW Recommendation, Waste Management — Reference the documents used to rank licensees (CMD 17-M45.3, p. 7)</p>	<p>CNSC staff do not accept the recommendation. See additional details for more information.</p>	<p>The 2016 ROR focuses on the safety and control areas (SCAs) of Radiation Protection, Environmental Protection and Conventional Health and Safety. References relevant to the information for those SCAs is provided in those reports are included in the ROR. Assessment of other SCA areas is the result of the assessment of information from a number of sources (such as annual report, inspection and program documents) and are not the focus of the 2016 ROR.</p>
<p>NW Recommendation, Document Disclosure– Make environmental protection and waste management plans publically available (CMD 17-M45.3, p. 7)</p>	<p>This information is presented on Slide 85.</p>	



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## Annex – Northwatch (NW), CMD 17-M45.3

Recommendation	CNSC Disposition	Additional Details
NW Recommendation, Document Disclosure – Make CSA standards publically available (CMD 17-M45.3, p. 8)	The CNSC does make read-only access of CSA nuclear standards available to the public. See additional details for more information.	The CNSC makes read-only access of CSA nuclear standards available to all members of the public for free. The access is via the regulatory documents page on the CNSC website.
NW Recommendation, Document Disclosure – Adopt expert panel recommendation on transparency and public disclosure (CMD 17-M45.3, p. 9)	No change.	The scope of Northwatch’s request was beyond the scope of annual performance review.
NW Recommendation, Public Outreach and Survey – Report on public outreach (CMD 17-M45.3, p. 9)	CNSC staff accept the recommendation and will look to improve the 2017 ROR. See additional details for more information.	Licensees are required to be in compliance with RD/GD-99.3 <i>Public Information and Disclosure</i> . Within RD/GD 99.3 there is requirement for regular program evaluation and open dialogue with the public and target audiences. Information on licensees’ public information programs will be included in the 2017 ROR.
NW Recommendation, Blind River, Atmospheric Emissions – Accounting for outages in atmospheric emission averages (CMD 17-M45.3, p. 13)	No change. See additional details for more information.	There were no exceedances of release limits at Blind River Refinery at any time in 2016. Action levels are in place and are designed to alert licensees before regulatory limits are reached. The Blind River Refinery is required to monitor throughout the year and provides information in quarterly and annual reports. Monitoring is not discontinued during summer shutdown so emission results do go down during that period. Any exceedance of a release limit would be reported to the CNSC.



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## Annex – Northwatch (NW), CMD 17-M45.3

Recommendation	CNSC Disposition	Additional Details
<p>NW Recommendation, Blind River, EMS – Annual safety meeting should be public (CMD 17-M45.3, p. 13)</p>	<p>CNSC staff do not accept the recommendation. Additional details are provided in this table.</p>	<p>The annual safety meeting is not a public meeting. This is an internal meeting at the senior management level. Blind River Refinery has an Environmental Management System that aligns with the requirements of CSA standard ISO 14001 Environmental Management Systems – Requirements with guidance for use. One of the requirements of the standard is to conduct an annual management review of the EMS. This will be clarified in the 2017 ROR.</p>
<p>NW Recommendation, Port Hope Conversion Facility – Airborne release limits in ROR and LCH are different (CMD 17-M45.3, p. 15)</p>	<p>CNSC staff provide the requested explanation in this table. See additional details.</p>	<p>The ROR is for the 2016 annual year. The limits for 2016 are as presented in CNSC staff’s CMD on page 40. The Northwatch CMD, page 15, shows the new release limits. Following the relicensing hearing for PHCF, the licence limits were changed to the values currently in the LCH. Both values are correct but they represent different calendar years. The limits were changed due to changes in the regulatory air dispersion model, receptor scenarios, exposure factors and dose coefficients used in the assessment.</p>
<p>NW Recommendation, Port Hope Conversion Facility; Cameco Fuel Manufacturing, and BWXT– Release limits remain significantly higher than emissions (CMD 17-M45.3, p. 15, 18, 20)</p>	<p>This information is presented on Slide 87.</p>	<p>The CNSC’s regulatory framework ensures that licensees have programs in place to protect the public, the environment and workers. Release limits are established for nuclear and hazardous substances released from a facility in order to protect from both radiological and chemical hazards. Provincial permits are also required and contain limits on releases of hazardous substances. Action levels are designed to alert licensees before regulatory limits are reached. The CNSC requires that licensees identify the parameters of their program that represent timely indicators of potential losses of control. CSA Group standard N288.8-17, was published in 2017 and provides methodology for establishing and implementing action levels for releases to the environment from nuclear facilities. CNSC staff are currently drafting a regulatory document which will include requirements and guidelines for establishing release limits and will standardize the methodology used to establish release limits at CNSC licensed facilities.</p>



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## Annex – Algonquins of Ontario (AOO), CMD 17-M45.4

Accommodation Recommended	CNSC Disposition	Additional Details
1, 6 and 10 – SRBT/Nordion/Best Theratronics sustain its commitment to fulfilling the regulatory standards to maintain environmental protection and health of safety of Algonquins	SRBT, Nordion and Best Theratronics are required to maintain programs that ensure that they continue to be in compliance with CNSC regulations, operate their facilities safely, and meet performance requirements with respect to health and safety of all persons and the environment.	
2, 7, and 11– Establish a communication protocol between the AOO, CNSC and [separately] SRBT/Nordion/Best Theratronics	The CNSC is committed to regular, structured and formalized engagement with Indigenous groups to discuss activities and issues related to the CNSC regulated facilities.	Licensees are expected to develop and implement public information programs based on stakeholder (including Indigenous groups) feedback
3, 8, and 12 – SRBT/Nordion/Best Theratronics provide meaningful engagement to Algonquin’s on its [their] environmental protection program	Licensees are expected to develop and implement public information programs based on stakeholder (including Indigenous groups) feedback. These programs are tailored to meet the information needs of the stakeholder audience.	Licensees are required to review their public information programs on a regular basis. Licensees are encouraged to engage in a dialogue with AOO.
4(a), 9, 13, 23 – SRBT/Nordion/Best Theratronics report on dose to Algonquin citizens	Licensees monitor and report on doses to members of the public in accordance with CNSC regulatory requirements.	The CNSC requires that licensees ascertain and record doses to all workers at their facility as well as doses to members of the public as a result of the licensed activity. As reported in the ROR, doses to workers and the public are well below the CNSC’s regulatory dose limits and ALARA.
5 and 17 (d) – Provide meaningful participation for the AOO in the CNSC’s IEMP	CNSC staff developing IEMP sampling plans take into consideration any impacts on indigenous communities in the vicinity of the facilities, as applicable.	The IEMP results are made available on the CNSC website.



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## Annex – Algonquins of Ontario (AOO), CMD 17-M45.4

Accommodation Recommended	CNSC Disposition	Additional Details
4(b), 9 and 13 – Licensees develop a communication and notification protocol with the AOO for reporting exceedances or abnormalities around dose	Licensees are required to have a public disclosure protocol in place that includes reporting events and unusual occurrences.	Licensees are expected to develop and improve public information programs based on stakeholder and Indigenous groups' feedback.
14 and 16 – Stage 2 archaeological assessment of SRBT/Nordion/and Best Theratronics should be completed and findings disclosed to the AOO	All three licensed facilities are in urban/industrial built-up environments. CNSC staff are committed to exploring this topic in a structured, formalized forum.	
15 – An Indigenous knowledge, land use, and occupancy study should be conducted near all CNSC licensed facilities within unceded Algonquin territory	All three licensed facilities are in urban/industrial built-up environments and have been operating safely for an extended period of time. CNSC staff are committed to exploring this topic in a structured, formalized forum.	
17 (a)-(c) – Establish a communications protocol related to regulatory oversight programs and activities	CNSC staff will involve AOO in the development of sampling plans for IEMP, as appropriate. CNSC regulatory oversight activities such as inspections are conducted by highly qualified and certified inspectors.	
18 – Establish a communications protocol on SCA activities, provide capacity, develop policy guidance and involve the AOO in compliance monitoring programs	CNSC staff will involve AOO in the development of sampling plans for IEMP, as appropriate. Other CNSC compliance monitoring activities are conducted by highly qualified and certified inspectors. The ROR provides a summary of compliance performance.	





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## Annex – Algonquins of Ontario (AOO), CMD 17-M45.4

Accommodation Recommended	CNSC Disposition	Additional Details
<p>19, 28 – Set out dose limits to be applied to individuals (including harvesters, land users and workers) who may be exposed to radiation due to accidents or malfunctions, allow AOO to review and comment on dose limits and provide funding to participate</p>	<p>This request is outside the scope of the ROR.</p>	<p>The CNSC’s process of regulatory amendment affords all persons ample opportunities to participate fully in establishing appropriate limits. Communications strategies around setting these limits include comprehensive consultations and outreach to all communities.</p>
<p>20 – Mandatory notification and transmittal of non-compliances to Indigenous communities in a user friendly manner</p>	<p>Licenses are required to have a public information program in place that includes reporting events and unusual occurrences at the facility to the stakeholder public. Licenses post events on their websites, and the CNSC website also posts information regarding events.</p> <p>The CNSC is committed to regular, structured and formalized engagement with Indigenous groups to discuss activities and issues related to the CNSC regulated facilities. The CNSC strives for continuous improvements to provide data and information of interest to the public and Indigenous groups in a manner that can easily be understood.</p>	<p>Matters related to routine compliance activities are contained in CNSC’s inspection reports, which can be provided upon request.</p>
<p>21, 30 – CNSC lengthen review timelines to accommodate AOO’s internal review process</p>	<p>AOO was provided a two-week extension on the 30 day review period. Review periods are established in the <i>Commission Rules of Procedure</i> and are the purview of the Commission Secretariat.</p>	<p>Licenses post events on their website and the CNSC website also posts information regarding events. Licenses are expected to develop and improve public information programs based on stakeholder feedback.</p>



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## Annex – Algonquins of Ontario (AOO), CMD 17-M45.4

Accommodation Recommended	CNSC Disposition	Additional Details
22 – AOO's involvement in SCA framework	The CNSC is committed to regular, structured and formalized engagement with Indigenous groups to discuss activities and issues related to the CNSC regulated facilities, including the SCA framework and associated oversight activities.	
23, 24 – AOO seeks to be engaged in regulatory oversight of radiation exposure to Algonquin people and workers and in response to accidents and spills during transportation	Licensees have trained and specialized staff, protective equipment, and monitoring to ensure safe operations and to control exposures. The transport of nuclear substances is a regulated activity that requires licensees to have an emergency plan to deal with accidents and spills during transport, including a notification protocol.	
25, 26, 28, 29 – All of these accommodation requests relate to providing AOO with opportunity and funding capacity	The CNSC's participant funding program is set up with the express goal of providing to groups who wish to provide relevant value - added information for the commission's consideration.	



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**END OF ANNEX**