Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2020

Commission Meeting
November 25, 2021
CMD 21-M32.A

CNSC Staff Presentation

Updates to CMD 21-M32

- Update on the Whiteshell Laboratories security safety and control area (SCA) rating for 2020 (CMD 21-M32.B)
- Corrections to regulatory oversight report dashboard (Appendix B of CMD 21-M32)
  - Indicate that the SCAs environmental protection, radiation protection, and conventional health & safety are the focus of the regulatory oversight report
  - Update SCA ratings to reflect change to Whiteshell Laboratories security SCA rating
  - Remove word MAX prior to regulatory dose limits
  - Indicate that IEMP is the acronym for the Independent Environmental Monitoring Program

Outline

- Overview
- Canadian Nuclear Laboratories (CNL) Sites
- CNSC Staff Regulatory Oversight
- CNSC Staff Assessment
- Indigenous Consultation and Engagement
- Other Matters of Regulatory Interest
- COVID-19 Response
- Key Themes from Interventions
- Conclusions

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OVERVIEW

CNSC Regulatory Oversight Reports – 2020

- November 23, 2021:
  - Use of Nuclear Substances in Canada
- November 25, 2021:
  - **Canadian Nuclear Laboratories Sites**
- December 15-16, 2021:
  - Uranium Processing and Nuclear Substance Processing Facilities
  - Canadian Nuclear Power Generating Sites
  - Uranium Mines and Mills

CNL Regulatory Oversight Report – 2020

- CNL sites
- CNSC staff regulatory oversight efforts
- CNSC staff assessment of CNL sites
  - Ratings for CNL sites against the CNSC's 14 SCAs
- Indigenous consultation and engagement
- Reportable events
- Other matters of regulatory interest
  - Public engagement
  - COVID-19 response

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

UNPROTECTED/NON PROTÉGÉ

ORIGINAL/ORIGINAL
CMD: 21-M32
Date signed/Signé le : 26 AUGUST, 2021

Annual Program Report

Canadian Nuclear Laboratories

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2020

Rapport annuel sur les programmes

Laboratoires Nucléaires Canadiens

Rapport de surveillance réglementaire pour les sites des Laboratoires Nucléaires Canadiens: 2020

Public Meeting

Scheduled for:
November 24-25, 2021

Réunion publique

Prévue pour :
Les 24 et 25 novembre 2021

Submitted by:
CNSC Staff

Soumis par :
Le personnel de la CCSN

eDoc 6463976 (WORD)
eDoc 6608428 (PDF)

Canada

CNL Regulatory Oversight Report Changes – 2020

- Upfront acknowledgement of Indigenous communities
- Plain language summary
- Information on all SCAs
- Change in SCA rating system
- Update on nuclear liability

- Use of hyperlinks for online content
- Additional data context (e.g., sampling and analytical techniques, sources of equations)
- ROR dashboard

Indigenous Consultation and Engagement (1/2)

CNSC staff would like to acknowledge the Indigenous Nations, communities and organizations whose traditional and/or Treaty territories are in proximity to the sites covered in this ROR:

Chalk River Laboratories and Nuclear Power Demonstration
- Algonquin Anishinabeg Nation Tribal Council (7 distinct Nations)
- Algonquins of Ontario
- Algonquins of Pikwàkanagàn
- Métis Nation of Ontario
- Williams Treaties First Nations (7 distinct Nations)

Port Hope Project and Port Granby Project
- Métis Nation of Ontario
- Mohawks of the Bay of Quinte
- Williams Treaty First Nations (7 distinct Nations)

Gentilly-1
- Grand Conseil de la Nation Waban-Aki (2 distinct Nations)
- Nation huronne-wendat

Whiteshell Laboratories
- Black River First Nation
- Brokenhead Ojibway Nation
- Grand Council of Treaty 3
- Hollow Water First Nation
- Iskatewizaagegan #39 Independent First Nation
- Manitoba Metis Federation
- Northwest Angle #33
- Sagkeeng First Nation
- Shoal Lake #40 First Nation
- Wabaseemoong Independent Nations

Douglas Point
- Historic Saugeen Métis
- Métis Nation of Ontario
- Saugeen Ojibway Nation (2 distinct Nations)

Indigenous Consultation and Engagement (2/2)

- CNSC staff continued to engage and identify opportunities to discuss and address all topics of interest and concern (e.g., ongoing environmental assessments, environmental monitoring, status updates on Port Hope Project and Port Granby Project)
- CNSC staff informed Indigenous communities of participant funding opportunities for this report
- CNSC staff hosted a virtual engagement session with Indigenous communities and organizations near CNL sites for this report

CNSC is committed to building long-term relationships with Indigenous communities

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CNL SITES

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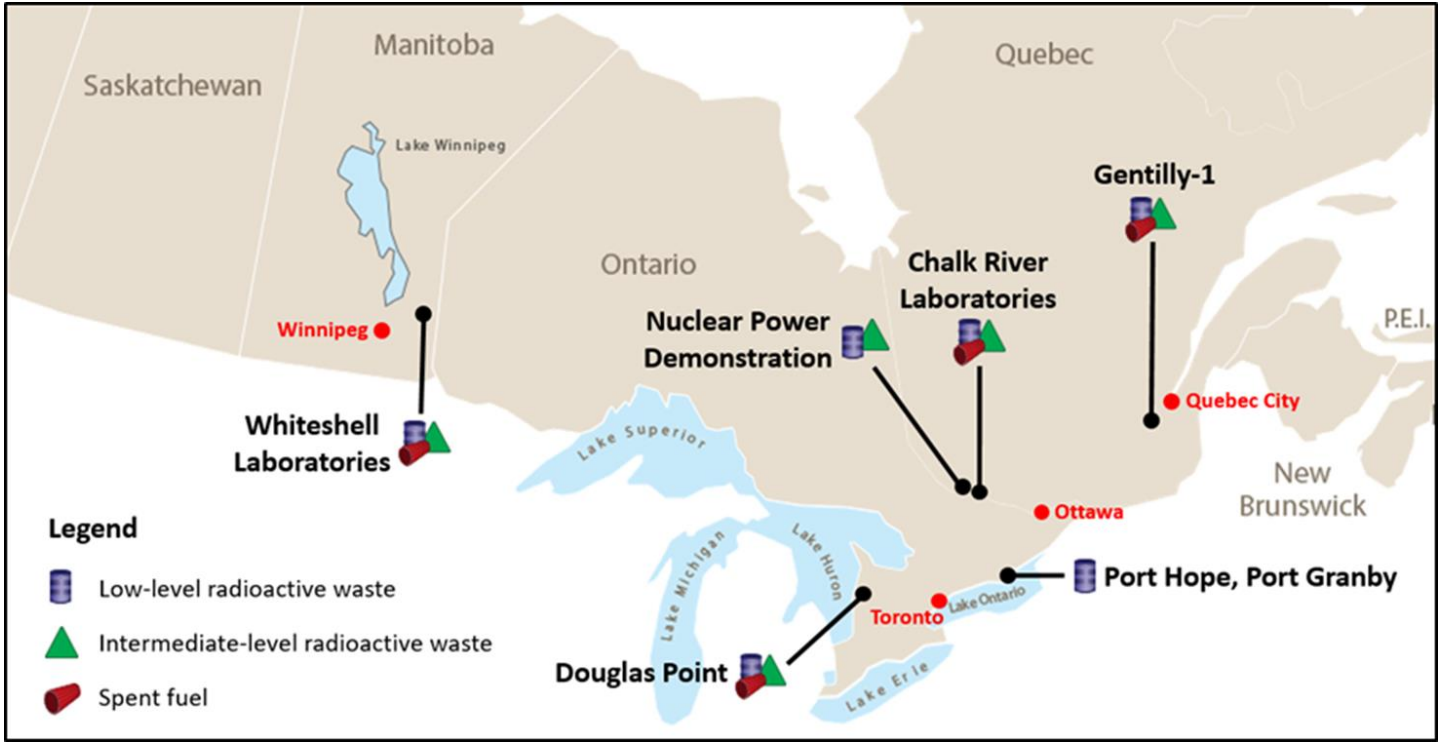
CNL Sites



Licences Covered by this Report

Site/Facility/Project	Licence Number (Changes in 2020)*
Chalk River Laboratories (CRL)	NRTEOL-01.00/2028
Whiteshell Laboratories (WL)	NRTEDL-W5-8.00/2024 (New licence and Licence Conditions Handbook issued in January 2020)
Port Hope Project (PHP)	WNSL-W1-2310.02/2022
Port Granby Project (PGP)	WNSL-W1-2311.02/2021
Port Hope Pine Street Extension Temporary Storage Site	WNSL-W1-182.1/2021
Port Hope Radioactive Waste Management Facility	WNSL-W1-344-1.8/ind
Douglas Point (DP) Waste Facility	WFDL-W4-332.02/2034
Gentilly-1 (G-1) Waste Facility	WFDL-W4-331.00/2034
Nuclear Power Demonstration (NPD) Waste Facility	WFDL-W4-342.00/2034
Waste Nuclear Substance Licence for Unspecified Locations	WNSL-W2-2202.0/2026
Canadian Nuclear Laboratories Import Licence	IL-01.00/2021
Canadian Nuclear Laboratories Export Licence	EL-01.00/2021

*The last four digits of the licence number reflect the year in which the licence expires, and ‘ind’ represents indefinite term

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CNSC STAFF REGULATORY OVERSIGHT

CNSC Staff Regulatory Focus – Chalk River Laboratories

- Oversight of CNL's decommissioning of legacy facilities and management of waste
- Oversight of CNL's planning and construction of new facilities, including science research facilities
- Monitoring the repatriation of highly enriched uranium to the United States
- 2021 update - inspector order issued on October 7, 2021 with respect to its physical security program:
  - Opportunity to be heard held by Designated Officer on November 2, 2021
  - Designated Officer decision made on November 12, 2021

CNSC staff performing an inspection at Chalk River Laboratories (CRL)

CNSC Staff Regulatory Focus – Whiteshell Laboratories

- Assessing the impacts of accelerated decommissioning
- Evaluating CNL's waste management and decommissioning work
- Reviewing detailed decommissioning plans (e.g. Health and Safety Buildings)
- Reviewing submissions related to facility modifications (e.g. conversion of Shielded Above Ground Storage)
- Assessing implementation of CNL's tiered-response force

Whiteshell Laboratories (WL) Main Campus (source: CNL)

Security SCA at Whiteshell Laboratories

- The 2020 rating for the security SCA was changed to below expectations following an inspection at Whiteshell Laboratories on September 27-29, 2021
- The purpose of this inspection was to verify implementation of CNL's tiered-response force at Whiteshell Laboratories
- Deficiencies were identified to the security program that were in effect during 2020
- There is no immediate risk to security of nuclear substances at Whiteshell Laboratories and CNL and CNSC staff are in discussions on next steps for taking adequate corrective actions
- Additional information is available to the Commission in the supplemental CMD 21-M32.B (protected information)

CNSC Staff Regulatory Focus – Port Hope Project

- Inspecting CNL's continued construction of the Port Hope Long-Term Waste Management Facility (LTWMF)
- Monitoring receipt of off-site waste at the LTWMF
- Assessing CNL's management and treatment of impacted water
- Monitoring remediation activities at the Port Hope Harbour Centre Pier, commercial properties, and residential properties

CNSC staff performing an inspection at Port Hope Project (PHP)

CNSC Staff Regulatory Focus – Port Granby Project

- Monitoring CNL's excavation of legacy waste, and its transfer to the Port Granby LTWMF
- Assessing CNL's management and treatment of impacted water
- Inspecting CNL's activities in capping the Port Granby LTWMF
- Several onsite inspections carried out focusing on the SCAs of environmental protection and physical design

CNSC staff performing an inspection at Port Granby Project (PGP)

CNSC Staff Regulatory Focus – Prototype Power Reactors (Douglas Point, Gentilly-1 and Nuclear Power Demonstration)

- Inspecting CNL's ongoing hazard reduction and waste characterization work, in preparation for full decommissioning
- Monitoring CNL's implementation of storage-with-surveillance activities
- Assessing CNL's application for a licence amendment to begin dismantlement work at DP
    - decommissioning licence amended by the Commission with expiration date of December 2030

CNSC staff performing an inspection at Douglas Point (DP)

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Regulatory Effort in 2020

Site/Facility/Project	Person Hrs of Compliance Work[a]	Person Hrs of Licensing Work[a]	Total Effort[a]	Trend Since 2019
Chalk River Laboratories[b]	6779	10219	16998	↑
Whiteshell Laboratories	1107	4423	5530	↓
Port Hope Project[c]	3098	405	3503	↑
Port Granby Project	1441	82	1523	↓
Douglas Point Waste Facility	360	3404	3764	↑
Gentilly-1 Waste Facility	67	32	99	↓
Nuclear Power Demonstration Waste Facility	509	4377	4886	↑
Total	**13361**	**22942**	**36303**	↑

[a] Excludes ongoing environmental assessments and licensing processes for NSDF, NPD and WR-1 in situ decommissioning projects
[b] Includes data for CRL, CNL Import Licence and CNL Export Licence
[c] Includes data for PHP, Port Hope Pine Street Extension Temporary Storage Site, Port Hope Radioactive Waste Management Facility, and Waste Nuclear Substance Licence for Unspecified Locations

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CNSC Staff Inspections at CNL Sites 2020

15 CNSC inspections

30 CNSC Notices of non-compliance (NNCs)

Site/Facility/Project	Inspections (Non-Compliances)
Chalk River Laboratories	7 (21)
Whiteshell Laboratories	0 (0)
Port Hope Project	2 (1)
Port Granby Project	4 (1)
Douglas Point Waste Facility	1 (5)
Gentilly-1 Waste Facility	0 (0)
Nuclear Power Demonstration Waste Facility	1 (2)
Total	**15 (30)**

All NNCs were considered low-risk and did not have an impact on health, safety and security at CNL sites

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CNSC STAFF ASSESSMENT

Safety and Control Areas (SCAs)

- CNSC staff have rated CNL's performance based on results from regulatory oversight activities across all 14 SCAs
- This report focuses on the radiation protection, conventional health and safety, and environmental protection SCAs
- In 2020, all SCAs were rated as satisfactory for all CNL sites with the exception of the rating of below expectations for the security SCA for Whiteshell Laboratories

CNSC Safety and Control Areas (SCAs)
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

CNSC staff assess and rate licensee performance for all SCAs

Radiation Protection Performance

- CNL's corporate and site-level programs were effective in controlling radiological hazards
- No radiation protection action level exceedances in 2020
- Doses to workers and the public were well below regulatory limits at all CNL sites

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Estimated Dose to the Public and Dose to Nuclear Energy Workers 2020

Estimated dose to the public and dose to NEWs remain low and radiation doses remain ALARA

Conventional Health and Safety

CNL Staff	CRL	WL	PHP	PGP	DP	G-1	NPD
Person Hours Worked	5 346 690	584 030	391 875	30 000	21 168	16 448	26 500
Lost-Time Injuries	4	1	0	0	0	0	0
Working Days Lost	78	2	0	0	0	0	0
Frequency[a]	0.15	0.34	0	0	0	0	0
Severity[b]	2.92	0.68	0	0	0	0	0

[a] Frequency = number of lost-time injuries x 200 000 hours of exposure ÷ person hours worked (based on 100 full-time workers)
[b] Severity = number of working days lost x 200 000 hours of exposure ÷ person hours worked (based on 100 full-time workers)

Contractors	CRL	WL	PHP	PGP	DP	G-1	NPD
Lost-Time Injuries	0	0	0	0	0	0	0

CNL maintains effective oversight of health and safety of workers

Environmental Protection Performance

- CNL's effluent verification monitoring programs at all sites were effective in controlling airborne and waterborne releases of radioactive and hazardous substances
- There were no action level exceedances in 2020
- All releases in 2020 were well below regulatory limits at all CNL sites

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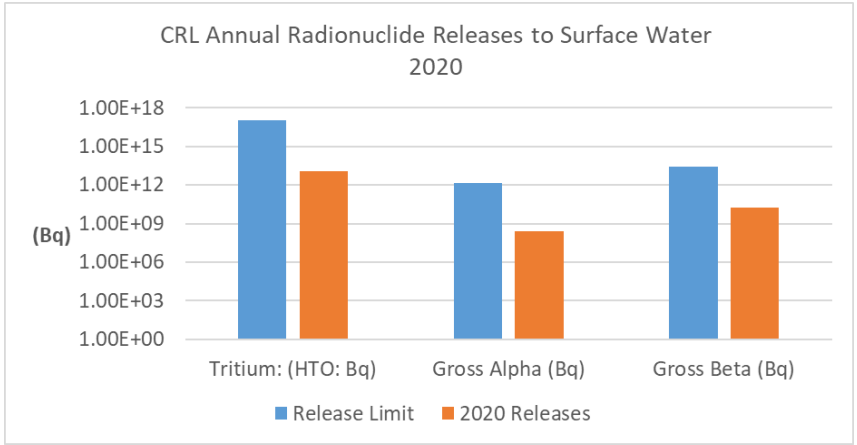
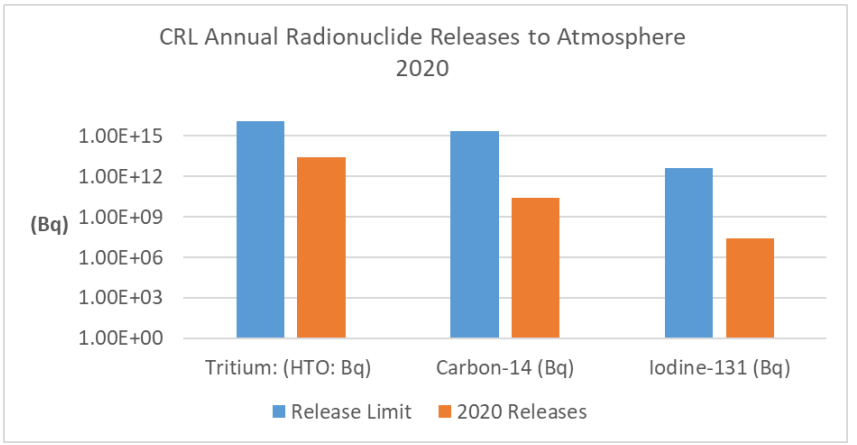
Releases to the Environment 2020 – CRL





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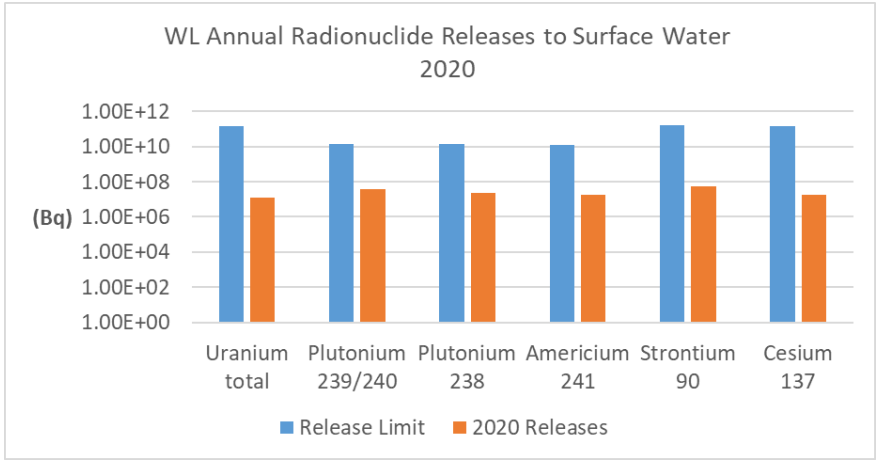
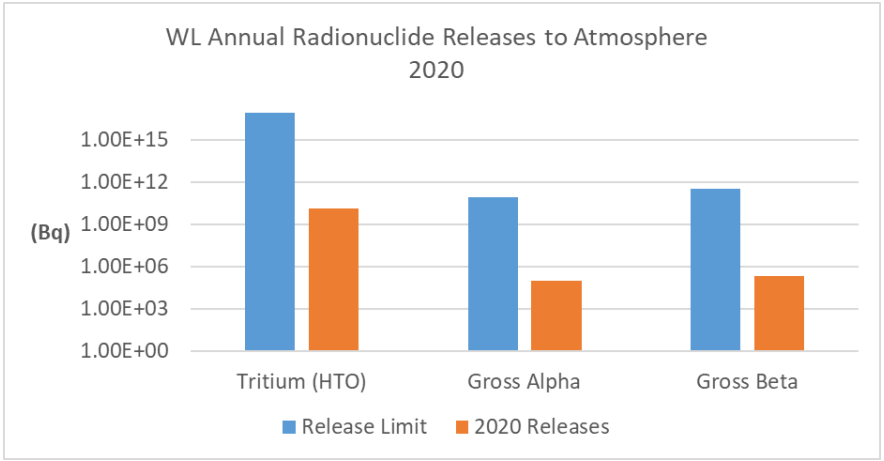
Releases to the Environment 2020 – WL





CNL's environmental protection programs are effective in controlling environmental releases

Independent Environmental Monitoring Program (IEMP)

- CNSC's IEMP complements compliance verification activities
- Samples are taken from publicly-accessible areas and analyzed at the CNSC's laboratory
- Results posted on CNSC website: http://www.nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm

Site/Facility/Project	IEMP Sampling Campaign Year
Chalk River Laboratories	2019
Whiteshell Laboratories	2017
Port Hope Project	2019
Port Granby Project	2019
Douglas Point Waste Facility	2019
Gentilly-1 Waste Facility	2018
Nuclear Power Demonstration Waste Facility	2018

IEMP results confirm that the public and environment are protected

Event Reporting at CNL Sites

- CNL is required to report specific types of events, as per REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills*
- CNSC staff analyze all event reports
- CNSC staff are satisfied with CNL's corrective actions

37 Reportable events

Site/Facility/Project	# of Events
Chalk River Laboratories	27
Whiteshell Laboratories	4
Port Hope Project	0
Port Granby Project	3
Douglas Point Waste Facility	1
Gentilly-1 Waste Facility	1
Nuclear Power Demonstration Waste Facility	1
Total	**37**

CNL met event reporting requirements in 2020

International Atomic Energy Agency (IAEA) Safeguards at CNL Sites

- The IAEA carries out inspections at nuclear sites in Canada to verify their exclusively peaceful nature
- No significant issues identified at CNL sites in 2020

65 International Atomic Energy Agency (IAEA) led safeguards inspections

Site/Facility/Project	# of IAEA Inspections in 2020 (CNSC Escort)
Chalk River Laboratories	55 (4)
Whiteshell Laboratories	2
Port Hope Project	3
Port Granby Project	0
Douglas Point Waste Facility	2
Gentilly-1 Waste Facility	2
Nuclear Power Demonstration Waste Facility	1
Total	**65 (4)**

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INDIGENOUS CONSULTATION AND ENGAGEMENT

CNL ROR 2020 Indigenous Engagement Session (1/2)

- The purpose of the engagement session was to share and have a discussion with interested Indigenous communities in the following areas:
  - CNL sites covered by the 2020 CNL ROR
  - 2020 CNL ROR findings and dashboard
  - How to participate in CNSC Commission proceedings including the intervention process
  - An opportunity to discuss and raise questions / concerns with CNSC staff

CNL ROR 2020 Indigenous Engagement Session (2/2)

- There were 20 participants in attendance and of those that responded:
  - 24% (4 of 17 respondents) indicated that prior to the session they had a poor understanding of the ROR
  - 64% (7 of 11 respondents) indicated that the session helped and 36% (4 of 11 respondents) indicated that the session somewhat helped them better understand the ROR and how to get involved
  - 73% (8 of 11 respondents) indicated that the session had the right level of detail on the ROR and how to get involved
  - 73% (8 of 11 respondents) indicated that they were satisfied with the responses provided by CNSC staff to their questions

A successful session with a CNSC staff commitment to continue such sessions in the future

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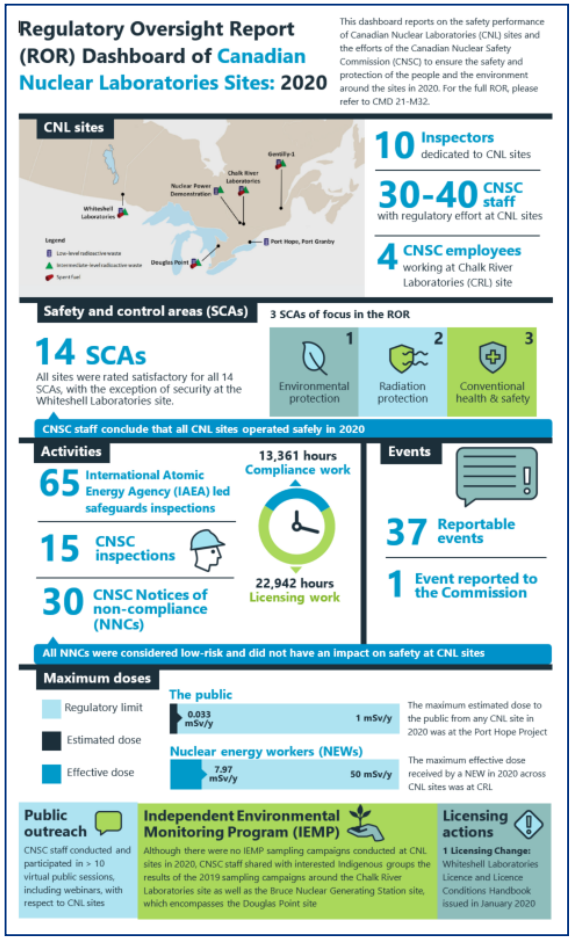
Regulatory Oversight Report Dashboard (1/2)

- A pilot version of an ROR dashboard was developed:
  - Contains key information and data
  - Presented in a publicly digestible manner
  - Included in 2020 CNL ROR (CMD 21-M32, Appendix B)
  - Used to complement engagement activities with Indigenous communities



Regulatory Oversight Report Dashboard (2/2)

- Participants at the engagement session responded that the dashboard was helpful or somewhat helpful in providing an overview of the ROR
- Participants indicated that in some cases further context would be helpful (e.g. reportable events) and also suggested the addition of other types of information (e.g. upcoming regulatory events)

Valuable tool to providing consistent, meaningful information to public and Indigenous communities

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OTHER MATTERS OF REGULATORY INTEREST

CNSC Public Engagement

- In 2020, CNSC staff conducted virtual engagement activities, which included:
  - Webinars
  - Participation in community events (e.g., environmental stewardship meetings)
- Information is shared through CNSC website, social media channels, annual regulatory reports, dashboards

CNSC is committed to disseminating information to the public and providing opportunities for discussion

Participant Funding Program

- CNSC made approximately $100,000 available through the Participant Funding Program
- Funding was awarded to 8 recipients based on independent funding committee recommendations

Recipient
Algonquins of Ontario
Canadian Environmental Law Association
Kebaowek First Nation
Grand Council of Treaty 3
Manitoba Metis Federation
Métis Nation of Ontario
Curve Lake First Nation
Historic Saugeen Métis

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COVID-19 RESPONSE

CNSC COVID-19 Response

- In March 2020, CNSC implemented their business continuity plan
- Travel to licensees' sites temporarily suspended
- CNSC staff provided technology to work from home
- COVID-19 protocol developed (e.g., pre-job brief, personal protective equipment)
- CNSC staff continued:
  - Inspections using a combination of remote and onsite methods on risk-informed basis
  - Conduct of desktop reviews of licensee reports and submissions
  - Remote engagement with Indigenous communities and the public
- Commission hearings and meetings held virtually

Safety and security maintained at all times

CNL COVID-19 Response

- In March 2020, CNL implemented their business continuity plan
- Onsite workforce reduced to essential workers only and focused on critical work at CNL sites
- Regulatory flexibility requested for non-critical work (e.g., inspection date postponement, due date extension for report submissions)
- Safety precautions implemented (e.g., remote work, mandatory personal protective equipment, daily screening, mental health supports)
- CNL's crisis management team developed 5-phase plan for return to full operation
- COVID-19 support at community and national level (e.g., ventilators)

CNSC staff continue to receive timely COVID-19 response updates from CNL

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KEY THEMES FROM INTERVENTIONS

Key Themes from Interventions (1/3)

- Eight interventions were received
- CNSC staff observed the following key themes:
  - Indigenous consultation and engagement
  - Content and scope of the ROR

Key Themes from Interventions (2/3)
Indigenous Consultation and Engagement

- Requested CNSC staff incorporate Indigenous knowledge and participation when planning IEMP activities
- Requested more engagement, information, and additional opportunities to participate in CNSC processes, particularly regarding waste management, transportation of nuclear material, and decommissioning
- Requested updates to language used in report, creating a separate section for Indigenous engagement

Key Themes from Interventions (3/3)
Content and Scope of ROR

- Requested further information be provided in all RORs:
  - Further information on notices of non-compliances from inspections
  - Additional detail on releases to the environment and public doses
  - Explanation of the effectiveness of remote inspections compared to onsite inspections
  - Assessment of effects of climate change on site activities

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CONCLUSIONS

Conclusions

- CNSC staff performed regulatory oversight activities for CNL sites in 2020, and conclude that:
  - all CNL sites operated safely in 2020
  - doses to workers and the public were below regulatory limits
  - workers were protected from conventional health and safety risks
  - environmental releases were below regulatory limits

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