



Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2022

CNSC Staff Presentation

Commission Meeting

November 1, 2023

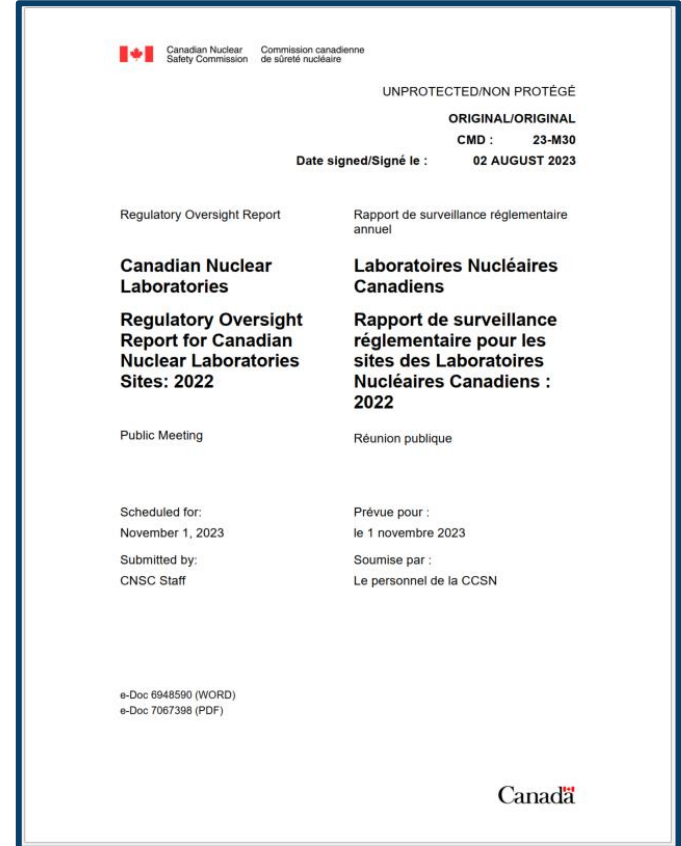
CMD 23-M30.A



ROR for Canadian Nuclear Laboratories Sites: 2022 - CMD 23-M30.A

The Canadian Nuclear Laboratories (CNL) ROR report includes:

- CNSC staff regulatory oversight efforts
- Assessment of CNL sites
 - CNSC’s 14 Safety and Control Areas (SCA) ratings
- Indigenous consultation and engagement
- ROR Dashboard
- Reportable events
- Other matters of regulatory interest



The image shows the cover page of the Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2022. The page is bilingual, with English and French text. At the top left, there is a Canadian flag and the text "Canadian Nuclear Safety Commission" and "Commission canadienne de sûreté nucléaire". The title "Regulatory Oversight Report" and "Rapport de surveillance réglementaire annuel" are prominently displayed. Below the title, it says "Canadian Nuclear Laboratories" and "Laboratoires Nucléaires Canadiens". The report is dated "02 AUGUST 2023". At the bottom right, there is the "Canada" logo.

UNPROTECTED/NON PROTÉGÉ
ORIGINAL/ORIGINAL
CMD : 23-M30
Date signed/Signé le : 02 AUGUST 2023

Regulatory Oversight Report / Rapport de surveillance réglementaire annuel

Canadian Nuclear Laboratories / **Laboratoires Nucléaires Canadiens**

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2022 / **Rapport de surveillance réglementaire pour les sites des Laboratoires Nucléaires Canadiens : 2022**

Public Meeting / Réunion publique

Scheduled for: November 1, 2023 / Prévus pour : le 1 novembre 2023

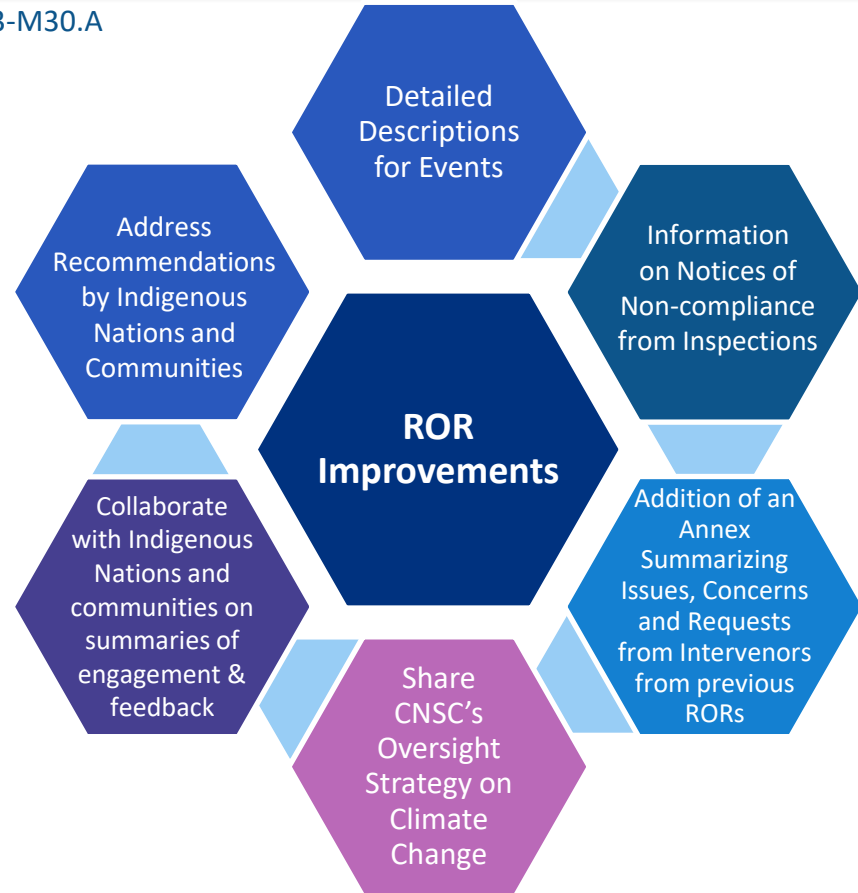
Submitted by: CNSC Staff / Soumise par : Le personnel de la CCSN

e-Doc 6948590 (WORD)
e-Doc 7067398 (PDF)

Canada

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CNSC staff met with intervenors from the 2021 CNL ROR and committed to improving the CNL ROR



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CNSC staff:

- Continued to engage and identify opportunities to discuss and address all topics of interest and concern (e.g., regular facility updates, ongoing environmental assessments, environmental monitoring, collaborative long-term engagement)
- Informed Indigenous Nations and communities of participant funding opportunities for this regulatory oversight report
- Hosted a virtual engagement session with Indigenous Nations and communities in proximity to CNL sites for this report



CNSC is committed to sharing, collaborating and building long-term relationships with Indigenous Nations and communities



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On September 7, 2023, an engagement session was held with Indigenous Nations and communities on the following areas:

- Sites covered by the CNL ROR
- CNL ROR findings
- Improvements to the CNL ROR
- How to participate in CNSC Commission proceedings including the intervention process
- An opportunity to discuss and raise questions / concerns with CNSC staff

CNSC staff remain committed to conducting Indigenous engagement sessions for future RORs

Indigenous Nations and communities in attendance

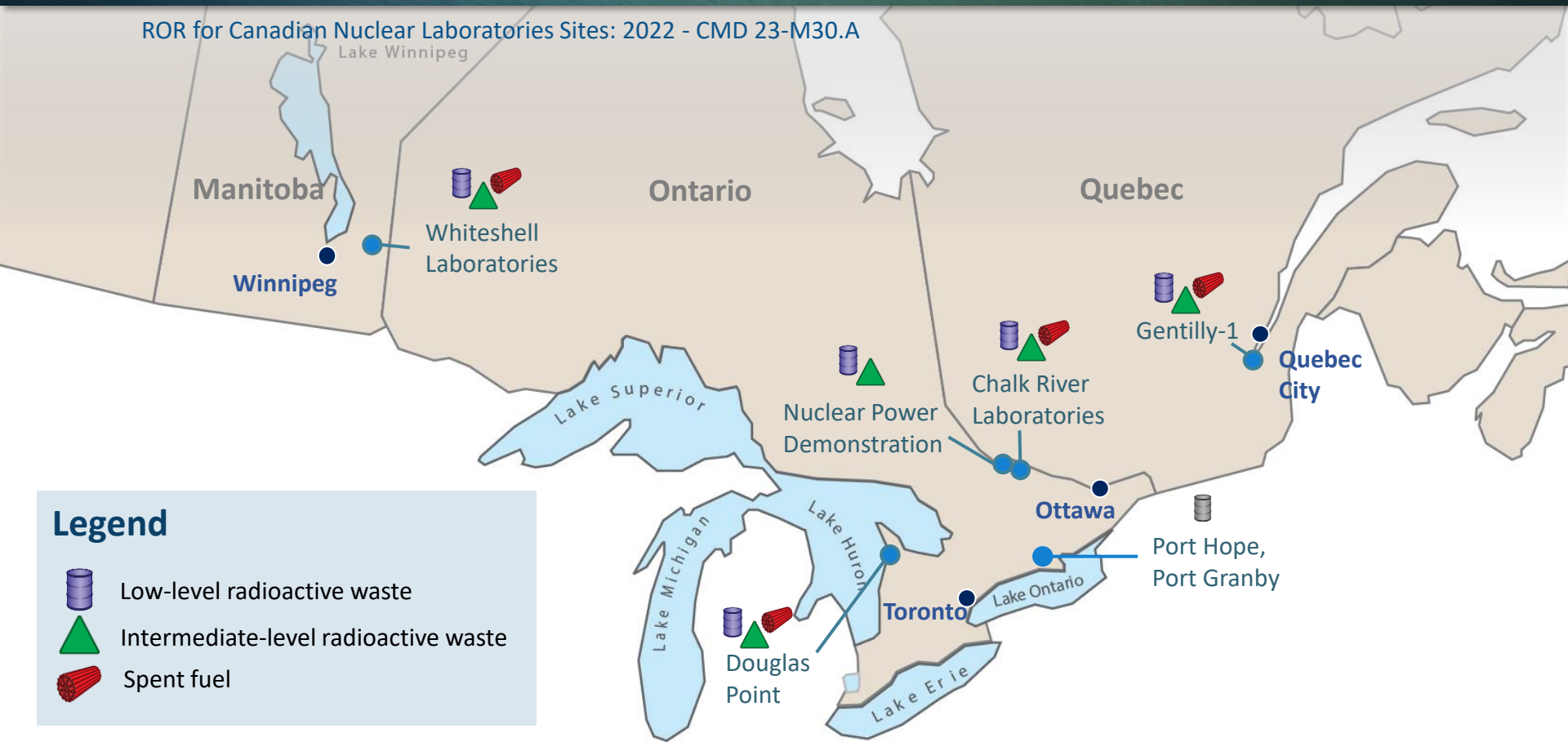
Alderville First Nation
Algonquins of Pikwakanagan First Nation
Algonquins of Ontario
Beausoleil First Nation
Black River First Nation
Chippewas of Kettle & Stony Point First Nation
Curve Lake First Nation
Grand Council Treaty 3
Hollow Water First Nation
Kebaowek First Nation
Kitigan Zibi First Nation
Manitoba Metis Federation
Timiskaming First Nation






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CNL SITES

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Legend

-  Low-level radioactive waste
-  Intermediate-level radioactive waste
-  Spent fuel

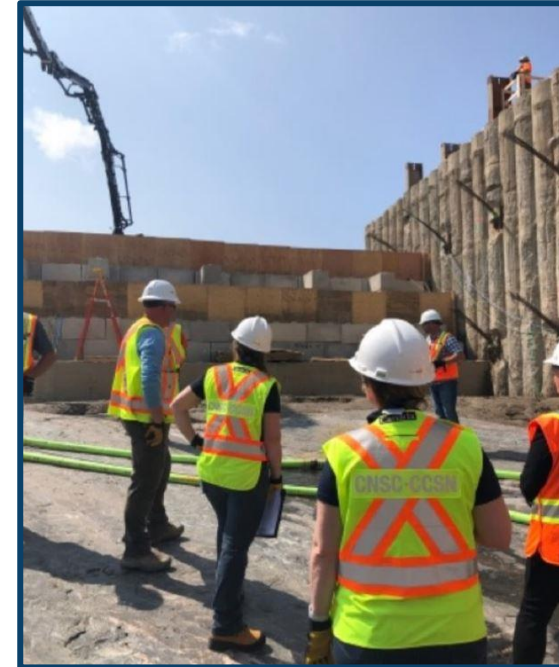


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CNSC STAFF REGULATORY OVERSIGHT

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- CNSC staff's regulatory oversight focused on:
 - Decommissioning of legacy facilities and management of waste, including fuel consolidation from Whiteshell Laboratories and Gentilly-1
 - Planning and construction of facilities, including new science research facilities, a modernized detritiation facility, and a modified medical isotope production facility
 - Security program improvements
- CNSC staff provided recommendations in the Part 1 and Part 2 hearing for CNL's proposed Near Surface Disposal Facility

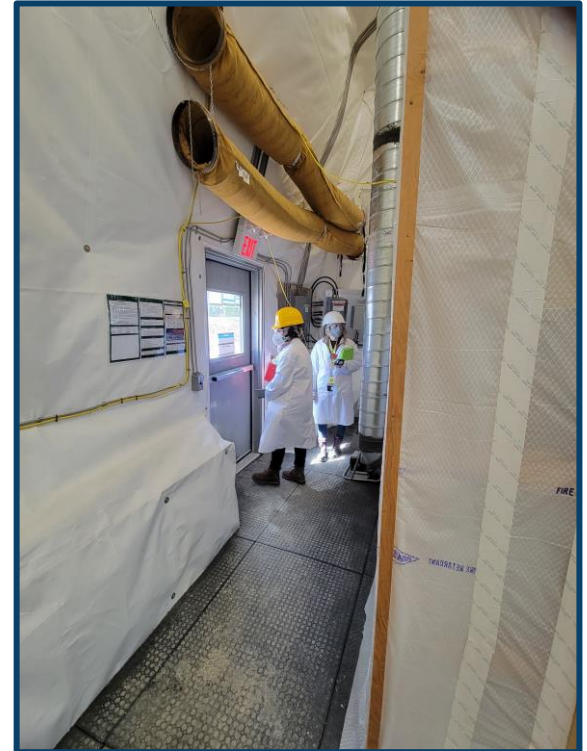


CNSC staff performing an inspection at Chalk River Laboratories. Source: CNSC staff

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CNSC staff:

- Evaluated waste management practices and planned decommissioning work
- Assessed licensing and Environmental Assessment submissions for proposed projects (e.g. In-situ Decommissioning of Whiteshell Reactor-1)
- Reviewed submissions related to proposed spent fuel retrieval work
- Initiated update of compliance verification criteria in the Licence Conditions Handbook
- Conducted Independent Environmental Monitoring in surrounding area



CNSC staff performing an inspection at Whiteshell Laboratories. Source: CNSC staff



CNSC Regulatory Focus – Port Hope Area Initiative (Port Hope Project, Port Granby Project)

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- The Commission issued a consolidated licence of the Port Hope Area Initiative for a 10-year period
- CNSC staff conducted focused inspections of the:
 - Training program at the Port Hope Project
 - Remediation activities of the Port Granby Former Waste Management Area
- CNSC staff’s regulatory oversight had an enhanced focus on the performance of the waste water treatment plants due to changes in processing Port Granby Project process residues at the Port Hope Project



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

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For Douglas Point Waste Facility, Gentilly-1 Waste Facility, and Nuclear Power Demonstration Waste Facility:

- CNSC staff monitored CNL's implementation of storage-with-surveillance activities

For Douglas Point Waste Facility and Gentilly-1 Waste Facility:

- Inspections were focused on hazard reduction and waste characterization work, in preparation for full decommissioning
- CNSC staff reviewed environmental protection documents and Detailed Decommissioning Plans

For Nuclear Power Demonstration Waste Facility:

- CNSC staff assessed licensing submissions for proposed Nuclear Power Demonstration in-situ decommissioning



*CNSC staff performing an inspection at Douglas Point
Source: CNSC staff*



CNSC Staff Inspections at CNL Sites 2022

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Site/Facility/Project	# of Inspections	# of Notices of Non-Compliance
Chalk River Laboratories	11	51
Whiteshell Laboratories	3	5
Port Hope Project	2	9
Port Granby Project	2	1
Douglas Point Waste Facility	2	7
Gentilly-1 Waste Facility	1	0
Nuclear Power Demonstration Waste Facility	0	0
Total	21	73

All notices of non-compliance have been closed or have an appropriate corrective action plan in place to prevent recurrence



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CNSC STAFF ASSESSMENT



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- CNSC staff have assessed CNL's performance based on results from regulatory oversight activities across all 14 Safety and Control Areas (SCAs)
- In 2022, all SCAs at CNL sites were rated as Satisfactory with the exception of the following SCAs which were rated as Below Expectations:
 - Security SCA at Chalk River Laboratories
 - Emergency management and fire protection SCA at 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

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- CNL's Below Expectations rating for the Security SCA at CRL carries over from 2021 into 2022
 - The Security SCA was rated Below Expectations in 2021 following a desktop review of the security response arrangements at CRL
 - An order was issued in October 2021 requiring CNL to implement appropriate corrective actions
- Multiple announced and unannounced inspections were performed at CRL in 2022
- CNSC staff reviewed CNL's Security Program Oversight Plan that contained actions to drive improvement in the program
- CNL made significant progress and has met the conditions for closure of the Order in 2023
- In October 2023, CNSC staff verified during an on-site inspection that the Tactical Response Plan has been implemented and is acceptable

As of mid-October 2023, all operational restrictions have been removed



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- The Emergency Management and Fire Protection SCA at Whiteshell Laboratories was rated as Below Expectations in 2022
- April 2023: CNL performed a self-assessment on the Fire Protection Program - Program-wide non-compliances were identified, several dating back to 2022
- May 2023: CNL reported this information as an event to the CNSC Duty Officer
- May 2023: The full event report identified additional non-compliances
- June 2023: Event Initial Report in CMD 23-M25 presented at Commission Meeting



CNL immediately placed the Whiteshell site into a safe shutdown state, where only essential compliance and maintenance work could be conducted



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May 2023: A CNSC designated officer issued a request pursuant to *General Nuclear Safety and Control Regulations s.12(2)*

- CNL completed all commitments made to the May 19, 2023, 12(2) request by September 28, 2023
- CNSC performed two inspections:
 - Emergency management and fire protection on August 22, 2023
 - Mutual Aid Drill on October 24, 2023

On August 21, 2023 CNL reported additional deficiencies with qualification of firefighters

- An Administrative Monetary Penalty was issued to CNL on October 13, 2023
- CNL has submitted a phased re-start plan that is acceptable to CNSC staff



Flow test of fire hydrant. Source: CNSC staff

**CNL has adequate
compensatory measures
in place to ensure the
protection of all staff, facilities
and the environment**

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- The Security SCA rating has changed from **Below Expectations** to **Satisfactory** from 2021 to 2022
- In 2021, CNSC staff identified areas of improvement in the implementation of the security program in relation to the Tactical Response Force equipment and training
- CNL has developed a Corrective Action Plan to address the non-compliances. All actions have now been completed and verified by CNSC staff.

CNL's corrective actions for improving the performance in security at Whiteshell Laboratories are satisfactory

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Doses to workers and the public were well below regulatory limits at all CNL sites

No radiation protection action level exceedances in 2022

CNL's corporate and site-level programs were effective in controlling radiological hazards



CNSC inspector conducting a field inspection at Chalk River Laboratories.



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

Maximum doses

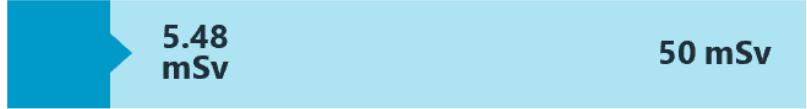
- Regulatory limit
- Estimated dose
- Effective dose

The public



The maximum estimated dose to the public from any CNL site in 2022 was at the Port Granby Project.

Nuclear energy workers (NEWs)



The maximum effective dose received by a NEW in 2022 across CNL sites was at Chalk River Laboratories.

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- All CNL sites need to report workplace lost time injuries to the CNSC and other federal and provincial agencies
- A Recordable Lost Time Injury (RLTI) is a workplace injury that results in the worker being unable to work for a period of time
- In 2022, there were a total of four (4) RLTI's at CNL sites
 - Three (3) at Chalk River Laboratories
 - One (1) at Port Hope Project
- CNL's Conventional Health and Safety Performance is Satisfactory and meets regulatory requirements

CNL maintained effective oversight of health and safety of workers

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CNL's effluent verification monitoring programs at all sites were effective in controlling airborne and waterborne releases of radioactive and hazardous substances

One release limit exceedance at the Port Hope waste water treatment plant

Two action level exceedances at the Port Hope Project waste water treatment plant



Water sample collection conducted by CNSC staff. Source: CNSC staff



Port Hope Project - Exceedances

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- Licensees are required to report to the CNSC and other regulatory authorities any unauthorized releases of hazardous substances of nuclear materials to the environment
- In 2022, the following exceedances occurred at the Port Hope Project waste-water treatment plant:

Weekly release limit **exceedance of copper** and
weekly action level **exceedance of zinc** during
week ending **June 1, 2022**

Presented to the Commission in
an Event Initial Report
(CMD 22-M38)
on June 28, 2022

Weekly action level
exceedance of arsenic
during week ending
June 7, 2022

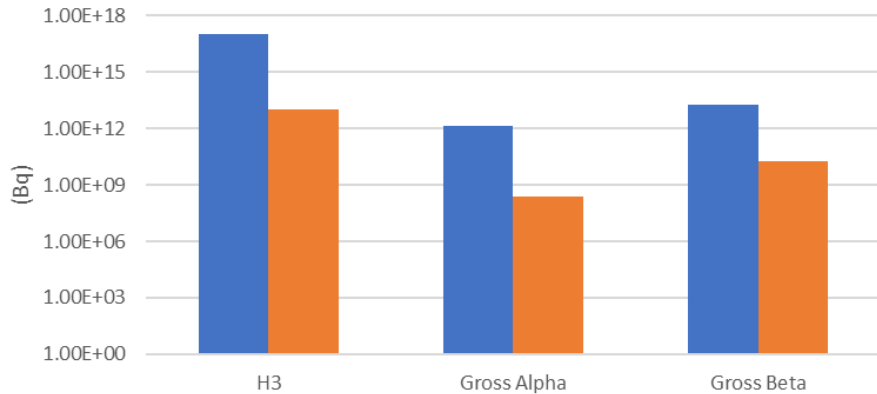
These exceedances did not pose a risk to human health or the environment

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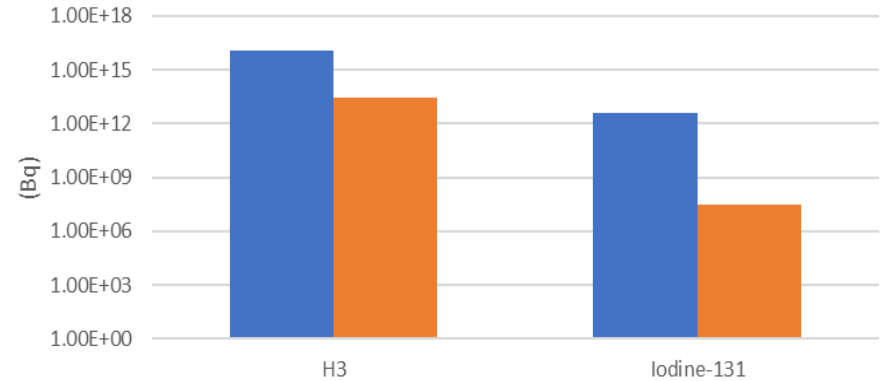
CNL's environmental protection programs were effective in controlling environmental releases



Chalk River Laboratories Annual Radionuclide Releases to Surface Water 2022



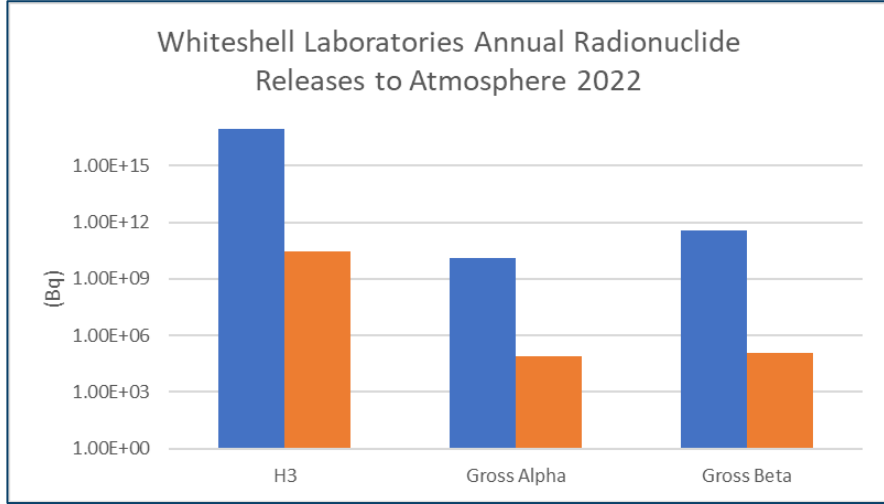
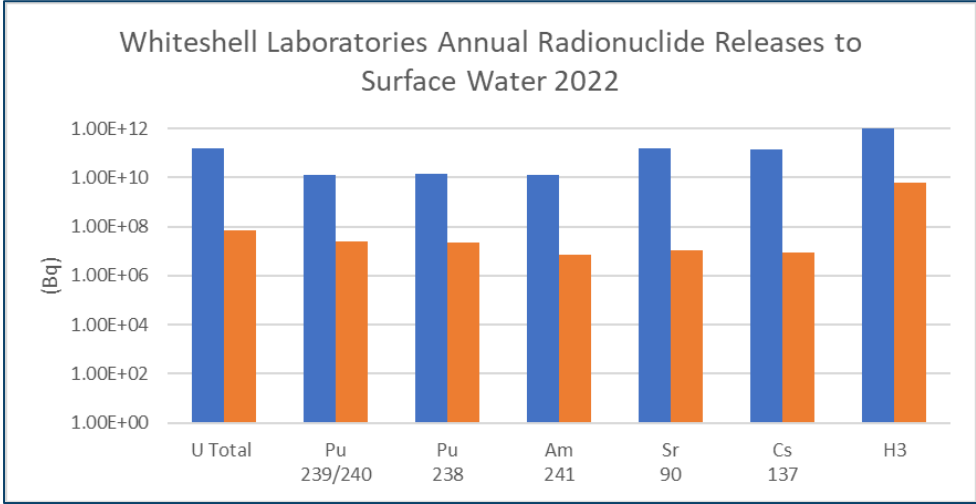
Chalk River Laboratories Annual Radionuclide Releases to Atmosphere 2022



■ Release Limit ■ 2022 Releases

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



■ Release Limit ■ 2022 Releases



Event Reporting at CNL Sites

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- 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*
 - REGDOC-3.1.3, *Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices*
- CNSC staff analyzed all event reports and are satisfied with CNL’s corrective actions
- No trends of concern were identified by reports provided by CNL

Site/Facility/Project	# of Events
Chalk River Laboratories	39
Whiteshell Laboratories	3
Port Hope Project	14
Port Granby Project	3
Douglas Point Waste Facility	0
Gentilly-1 Waste Facility	0
Nuclear Power Demonstration Waste Facility	0
Total	59

CNL met event reporting requirements in 2022



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OTHER MATTERS OF REGULATORY INTEREST

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In 2022, CNSC staff conducted engagement activities, which included:

- Virtual webinars
- Participation in community events (e.g., Petawawa Showcase, Nuclear Power Demonstration Waste Facility 60th anniversary, and CRL Open House)
- Sharing information through CNSC website, social media channels, annual regulatory reports, dashboards

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



CNSC staff conducting outreach at the Petawawa Showcase. Source: CNSC staff



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- CNSC awarded approximately \$98,040 through the Participant Funding Program
- Funding was awarded to 6 recipients based on independent funding committee recommendations

Recipients
Algonquins of Pikwakanagan First Nation
Chippewas of Kettle and Stony Point First Nation
Manitoba Métis Federation
Hiawatha First Nation
Kebaowek First Nation
Nuclear Transparency Project



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KEY THEMES FROM INTERVENTIONS



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- **Indigenous**
 - Opportunities to participate and engage in a variety of CNSC activities
 - Revise the type of language used in the report in relation to Indigenous Nations and communities
- **ROR content, more details on**
 - How SCA performance ratings are determined
 - CNSC's rationale for the level of safety significance assigned to each event
 - CNSC's oversight strategy of climate change resiliency



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ACTIONS FROM COMMISSION MEETINGS



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- Commission action from Event initial report CMD 23-M35: *“Safety stand-down at Canadian Nuclear Laboratories’ Whiteshell Site following the discovery of non-compliances in the fire protection program”*
 - “The Commission directs CNSC staff to provide an update to the Commission on this event, including lessons learned, at a future public meeting.”
- CNSC is currently undertaking a lessons learned assessment to:
 - Examine CNSC’s inspection processes on this file
 - Assess if there are any gaps in the compliance verification process
 - Answer could the CNSC be doing anything differently in its compliance activities to flag licensee issues not found during routine inspections

The CNSC is a learning organization and open to continuous improvement



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CNSC staff performed regulatory oversight activities at all CNL sites in 2022, and conclude that:

- All CNL sites operated safely in 2022
- Doses to workers and the public were below regulatory limits
- Workers were protected from conventional health and safety risks
- The environment was protected

CNSC staff will continue oversight of all SCAs over the next year and focus on:

- Improvement required in Emergency Management and Fire Protection at Whiteshell Laboratories and Security at Chalk River Laboratories



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