



Regulatory Oversight Report

USE OF NUCLEAR SUBSTANCES IN CANADA: 2022



E-Doc #7086949 (PPT)
E-Doc #7151491 (PDF)



CNSC Staff Presentation
Commission Meeting
November 2, 2023
CMD 23-M31.A



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



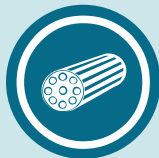
- Update requested by the Commission
- Key messages
- Program overview
- Ratings and trending
- Licensee performance
- Outreach and engagement
- Interventions
- Conclusion



CNSC staff inspecting a processing area for unsealed nuclear substances at a cyclotron facility (*source: CNSC staff*)

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**Update Requested
by the
Commission**



Recent regulatory actions:

- [Designated Officer Order](#) issued on March 21, 2023
 - Take measures to ensure the safety and security of the nuclear substances on site, eventually culminating with the removal of the nuclear substances from the property
 - An opportunity for these entities to be heard regarding the Order was subsequently held by the Commission
 - Currently under review by the Commission
- [Inspector Order](#) issued on May 24, 2023
 - Not to undertake any activities associated with the trailers containing the nuclear substances
 - Designated Officer confirmed the Order on July 25, 2023

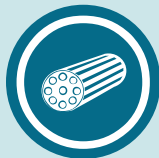


CNSC inspector verifies dose rate readings around trailer containing waste
(source: CNSC staff)

Nuclear substances on site remain safe and secure

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Key Messages

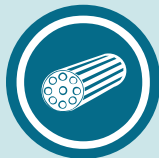


- Based on assessment of licensee performance results for 2022, CNSC staff conclude that nuclear substances in Canada are used safely
- Changes made to 2022 ROR in response to questions from the Commission and intervenors
- Stakeholder engagement is a priority

The use of nuclear substances and prescribed equipment in Canada remains safe and secure

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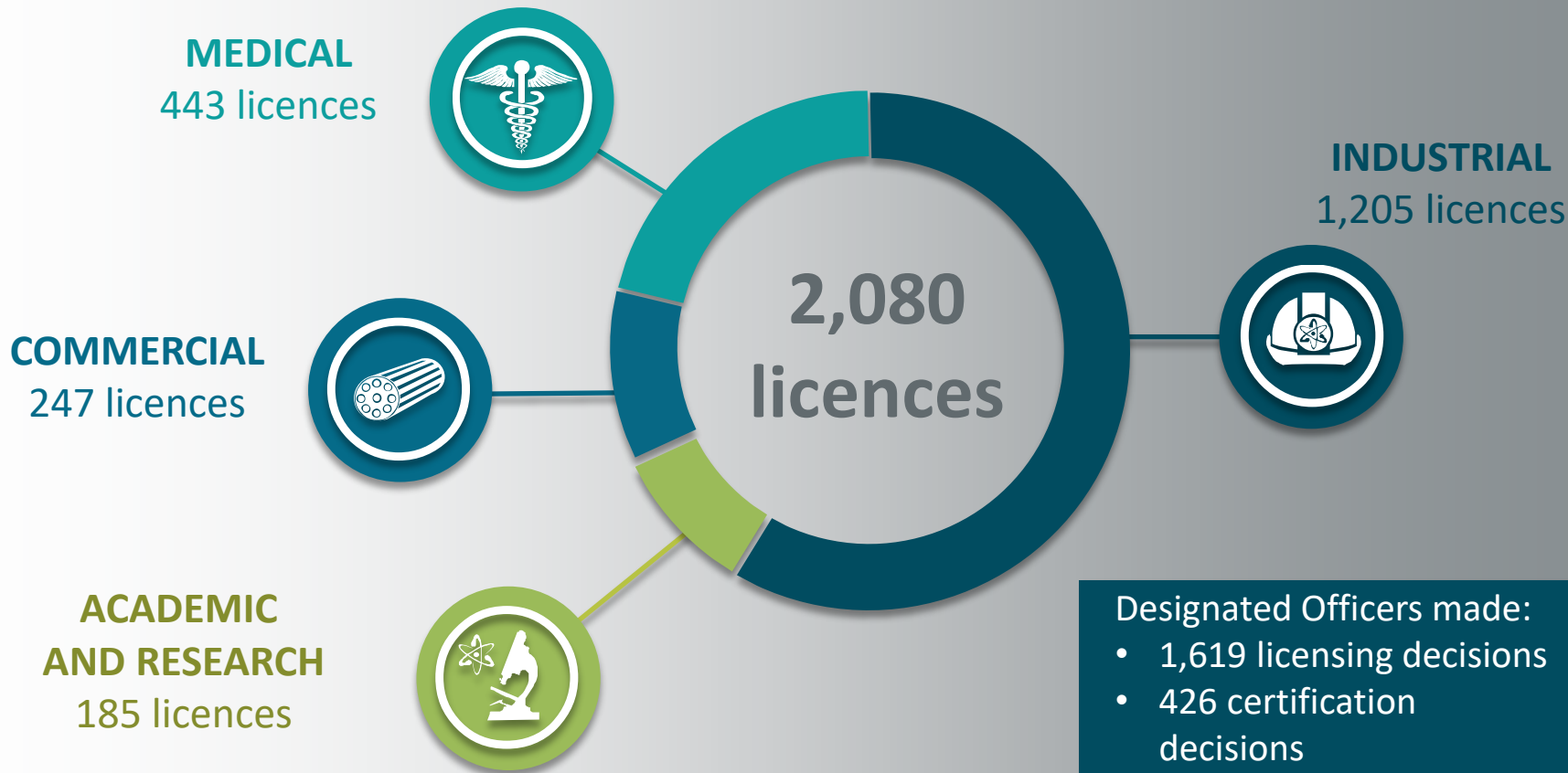


Program
Overview



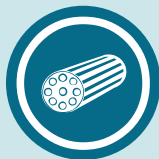
Diverse Uses Of Nuclear Substances

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Ratings and
Trending



The algorithm for calculating ratings is conservative.

A **single high-risk requirement** that receives a Below Expectation rating will drop the overall performance in that SCA to Below Expectations

Licenseses **with larger number of workers or who have more requirements** placed on them due to licenced activity, may see this **effect amplified**

Below expectation ratings are not necessarily indicative of a failure in a program



The number of Unacceptable ratings is a key in-year safety indicator

Staff will issue **Unacceptable ratings** in cases where licensee **actions are unsafe**

- Unsafe practices are addressed immediately using enforcement actions such as orders
- Orders are not closed until the CNSC is satisfied with the licensee's corrective actions

In 2022, **four** Unacceptable ratings were issued across **all SCAs**



Trending in the Nuclear Substances ROR

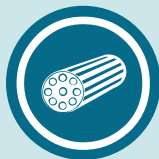
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- SCA ratings are an important safety indicator when taken in context
 - We take a conservative approach to rating
 - ROR results only capture single point in time (rating from inspection) and do not reflect corrective actions taken
 - Difficult to draw conclusions from year-over-year data, since different licensees are inspected every year
- In ROR 2022 - comparing 2022 results to a 5 year average
 - More meaningful to look at performance trends over a 5-year span

Trends provide useful insight, in context

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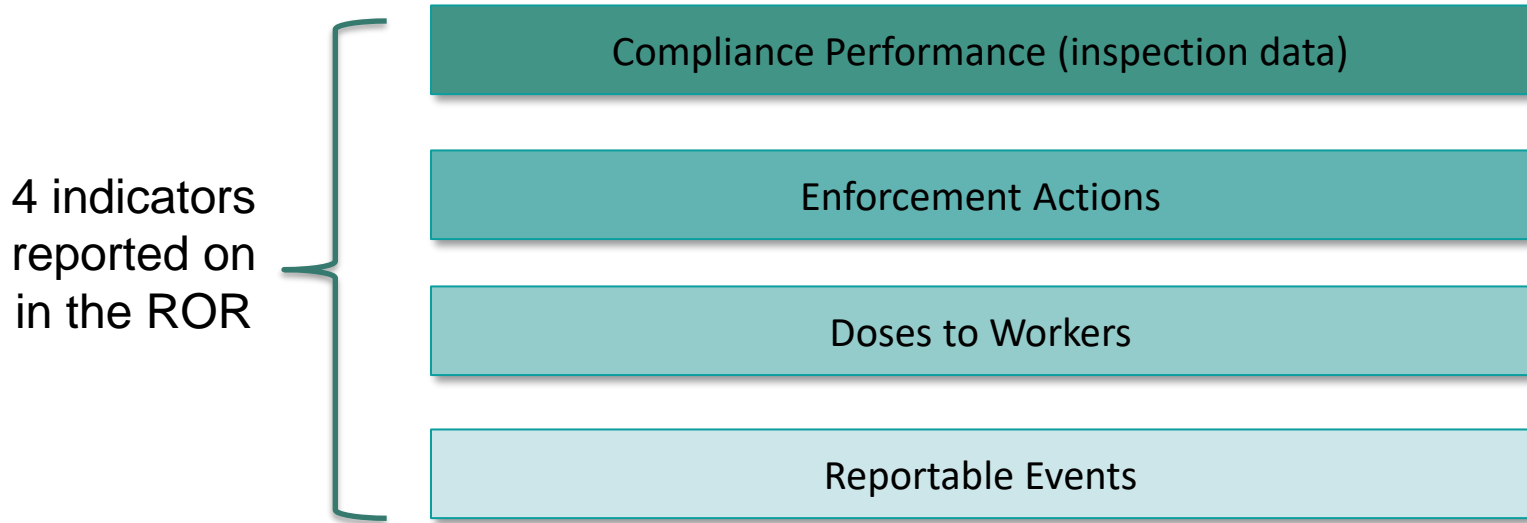
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Licensee
Performance



Multiple indicators are used to measure licensee performance



These 4 indicators confirm that the use of nuclear substances and prescribed equipment in Canada remains safe and secure



Compliance Performance

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Management System

98% of inspections resulted in satisfactory ratings
0 unacceptable ratings

Operating Performance

85% of inspections resulted in satisfactory ratings
0 unacceptable ratings

Radiation Protection

77% of inspections resulted in satisfactory ratings
4 unacceptable ratings*

Security

92% of inspections resulted in satisfactory ratings
0 unacceptable ratings

Conventional Health and Safety**

All WNSL achieved satisfactory ratings
0 unacceptable ratings

Environmental Protection**

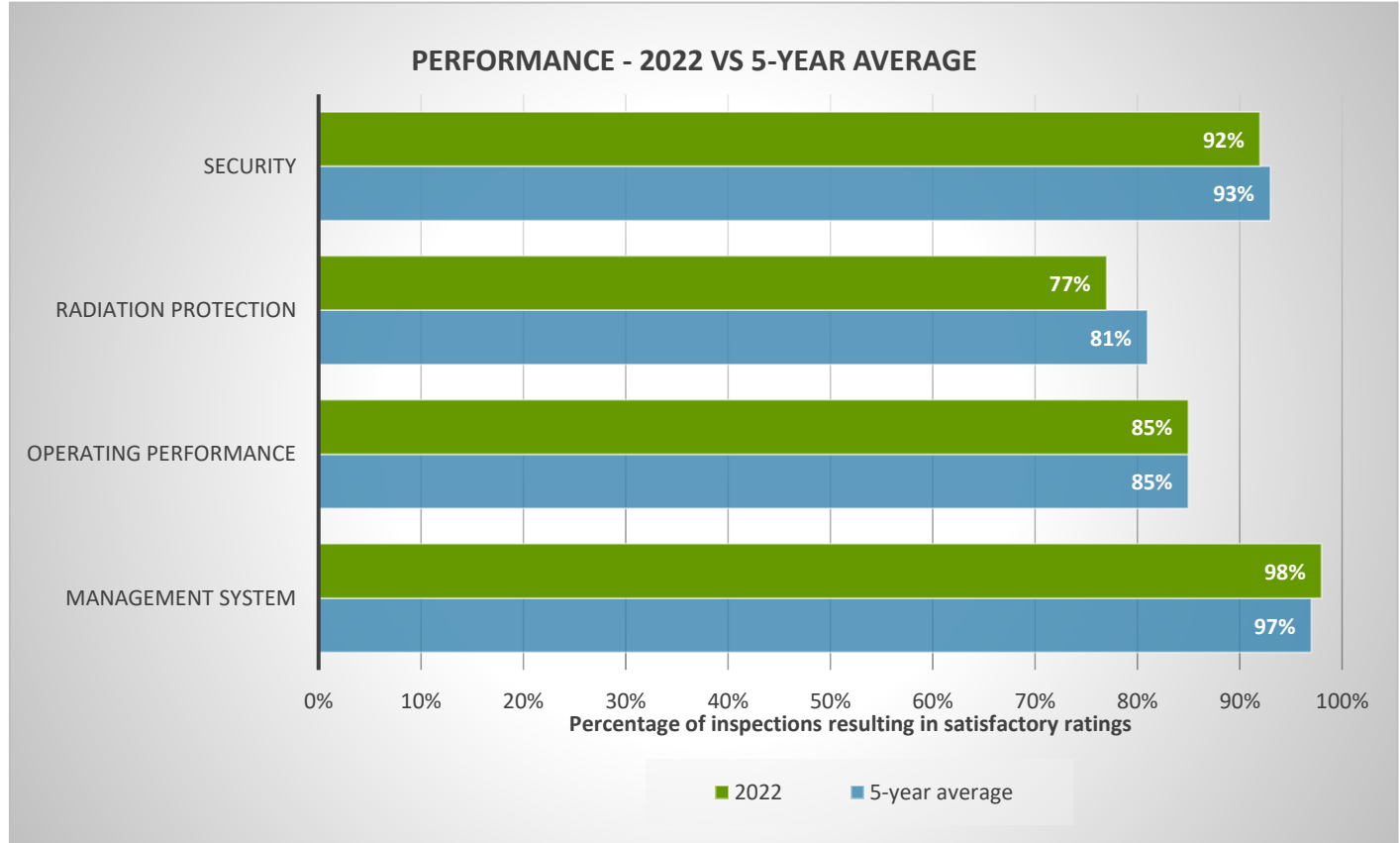
All WNSL achieved satisfactory ratings
0 unacceptable ratings

*3 of the 4 unacceptable ratings were issued to a single licensee as part of multiple inspections of this licensee

**These SCAs are only reported on for 4 waste nuclear substance licences covered by this report



5-year average comparisons provide a clearer view of performance trending compared to year-over-year trending





Enforcement Actions

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5 orders issued in 2022:

- 4 in response to inspections
- 1 when a licensee failed to submit a renewal application for its licence

All orders are closed

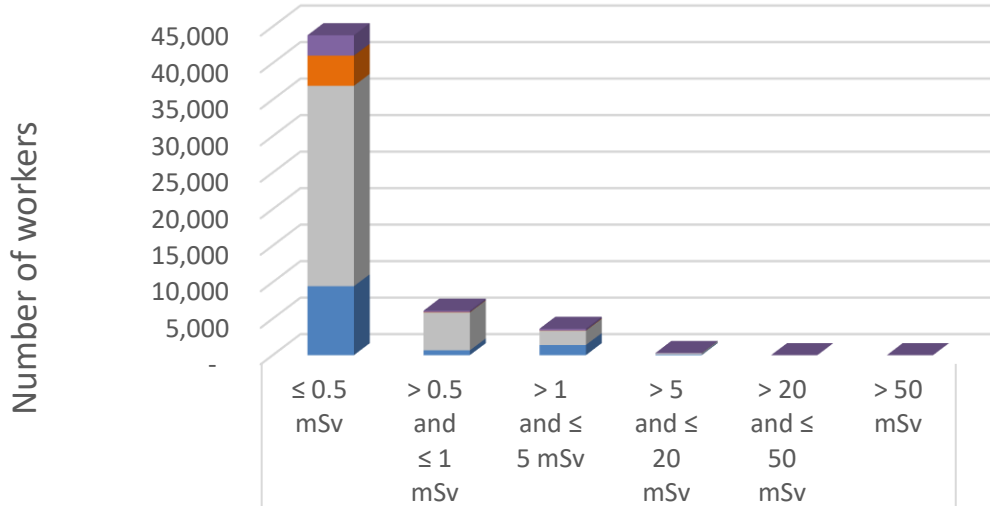
Oversight activities in 2022						
	2018	2019	2020	2021	2022	5-year avg.
Number of inspections	949	863	371	583	656	684
Number of enforcement actions	16	13	6	11	5	10

The CNSC uses a graduated approach to enforcement



Doses to Workers in 2022

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	≤ 0.5 mSv	> 0.5 and ≤ 1 mSv	> 1 and ≤ 5 mSv	> 5 and ≤ 20 mSv	> 20 and ≤ 50 mSv	> 50 mSv
Commercial	2,800	209	243	32	0	0
Academic and research	4,129	47	41	0	0	0
Industrial	27,444	5,176	1,938	170	0	0
Medical	9,443	659	1,395	96	0	0

93% of all workers had doses less than or equal to 1 mSv

53,822 workers

19,812 NEWs

- 0 reported doses above the regulatory limit for NEWs

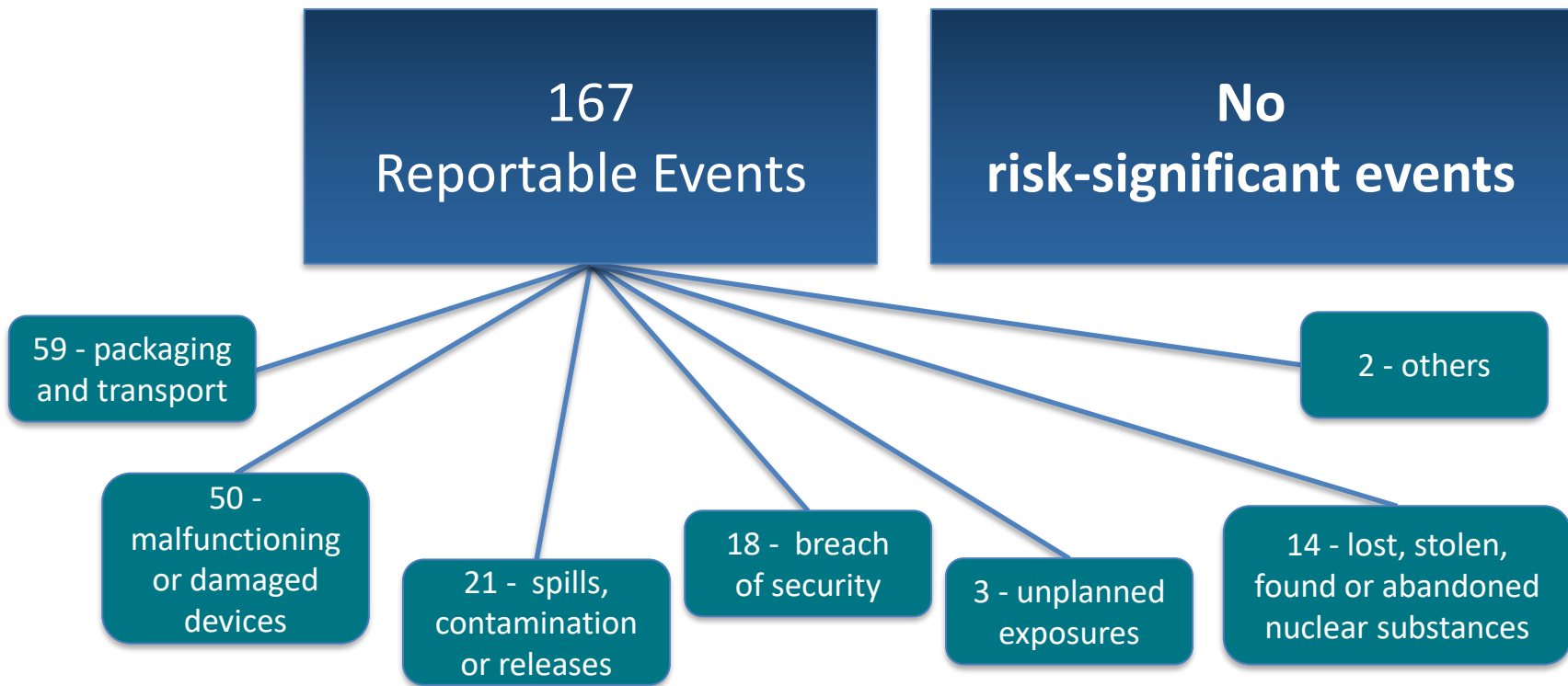
34,010 non-NEWs

- 3 reported doses above the regulatory limit for non-NEWs
- All 3 reports assessed and closed



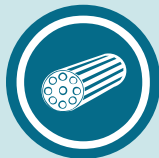
Reportable Events

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Outreach and
Engagement



Outreach and Engagement

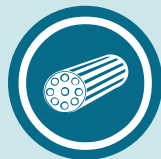
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- Town hall sessions
- Publication of the DNSR Digest
- Targeted email campaigns
- Outreach activities with Indigenous Nations and communities
- Meetings with associations or working groups
- Presentations at industry events
- Articles in industry publications
- Meetings between new licensees and licensing and compliance staff

Staff are committed to continued openness and transparency with our licensees, Indigenous Nations and communities, the public and other interested parties

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International
Obligations and
Commitments



Staff ensure that licensees implement measures required to meet international obligations and commitments by:

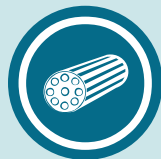
- Incorporating international requirements in Canadian regulations
- Applying IAEA codes, standards, and guidance documents
- Adhering to the Treaty on the Non-proliferation of Nuclear Weapons by implementing the Canada-IAEA safeguards agreement
- Including import/export restrictions on licences when required



International Atomic Energy Agency (IAEA),
Vienna, Austria
(source: Shutterstock)

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Interventions



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After the presentation of the 2021 ROR, staff:

- Responded to all intervenors individually addressing their comments (no interventions received from Indigenous Nations or communities)
- Offered to meet with the intervenors to discuss their interventions and staff response to their intervention
 - One intervenor requested a meeting that occurred in September 2023

Staff is committed to responsiveness and transparency



Incorporated additional information on:

- The licensing process
- The types of licensed activities covered in this report
- The rating system and its impact on trending

Responsiveness and transparency are key elements of the CNSC's commitment to building trust in the nuclear regulator



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Two requests for participant funding received – both requests approved for funding

Report was publicly available for written comments for a period of 45 days

4 interventions received

CNSC received 47 comments/recommendations



Key Intervention Themes in 2022

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Topic	Number of comments/recommendations
Reportable events	12
Availability of data	8
Report format and contents	5
Trends in reporting	5
International obligations	4
Outreach and engagement	3
Doses to workers	2
Commission proceedings	2
Inspection planning	2
Inventory control	1
CNSC website posting	1
Participant funding	1
Support for conclusions in the ROR	1



Key Intervention Themes in 2022

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- Availability of data
- Additional information on regulated industries
- Event reporting
- Performance of the medical sector in the radiation protection SCA

Interventions help improve regulatory oversight reports



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This report confirms:

- The majority of licensees inspected were in compliance with regulatory requirements
 - Any unsafe practices (Unacceptable ratings) were dealt with immediately
 - All non-compliances were corrected to the satisfaction of CNSC staff
- Doses remain low
- Staff ensured the closure of all enforcement actions
- None of the reported events were risk-significant
- CNSC regulatory oversight continues to be effective

The use of nuclear substances and prescribed equipment in Canada remains safe and secure



Hot cells used for handling unsealed nuclear substances produced in a cyclotron
(source: CNSC staff)

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