



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2022



CNSC Staff Presentation

Commission Meeting
December 14, 2023
CMD 23-M37.A

Presentation Outline

- Commission Member Document (CMD) submission
- Regulatory efforts
- Key Safety and Control Area (SCA) information
- Indigenous engagement activities
- Key themes from interventions
- Conclusions

UNPROTECTED/NON PROTÉGÉ

ORIGINAL/ORIGINAL

CMD: 23-M37

Date signed/Signé le : 12 SEPTEMBER 2023

Reference CMD(s)/CMD(s) de référence : 22-M36

Annual Program Report

Rapport annuel sur les programmes

**Regulatory Oversight
Report for Uranium
Mines and Mills in
Canada: 2022**

**Rapport de surveillance
réglementaire des mines
et usines de
concentration d'uranium
au Canada : 2022**

Public Meeting

Réunion publique

Scheduled for:
December 13 to 14, 2023

Prévue pour :
Les 13 et 14 décembre 2023

ROR for UMMs in Canada: 2022
Posted to CNSC Web-site on
2023 September 13



Errata

- Table 2.7: Uranium mines and mills, lost-time injury statistics, 2022 (including contractors)
 - Severity rate for McClean Lake Operation should read 28.6 not 49.8
- Table F-1: Operating uranium mines and mills – financial guarantees
 - Financial guarantee for Key Lake Operation should read \$222,500,000 not \$213,400,000
- Appendix Hyperlinks
 - Hyperlinks are broken for various appendices resulting in a reference to a ‘blank space’

None of these items change the overall conclusions in the report



Commission Member Document Submission

- Includes information on the 2022 calendar year for 5 operational sites
- Describes regulatory efforts by CNSC staff
- Focuses on 3 safety and control areas:
 - Radiation protection
 - Environmental protection
 - Conventional health and safety
- Includes Indigenous engagement activities



Note: Rabbit Lake was in care and maintenance throughout 2022.



Regulatory Oversight Report Dashboard

- Developed in response to the Commission’s recommendation to improve communication of information
- Hand-out used to complement engagement activities with Indigenous Nations and communities
- Summary report on the safety performance and regulatory highlights of the uranium mines and mills in Canada in 2022

Dashboard QR codes support immediate access to the CNSC’s online information

Regulatory Oversight Report (ROR) Dashboard of Uranium Mines and Mills: 2022



This dashboard reports on the safety performance and regulatory highlights of the uranium mines and mills in Canada in 2022. The ROR will be available in September and can be found by scanning the QR code to the right.

Purpose of the ROR The uranium mines and mills regulatory oversight report (ROR) provides detailed information on the regulation of operating uranium mine and mill (UMM) facilities in 2022. The ROR provides an opportunity to share information with Indigenous Nations and communities impacted by the facilities, and provides an opportunity to present concerns to the Canadian Nuclear Safety Commission. For more information, the QR code on the left will take you to visit our website.

2022 Site Status

By November of 2022, Key Lake, McArthur River, Cigar Lake and McClean Lake were all operating, while Rabbit Lake remained in a state of care and maintenance. Facilities in a state of care and maintenance still hold a licence to operate a mine or mill while not producing uranium products. Sufficient staff maintain safety and security at facilities during this time.

7 CNSC Inspectors
Dedicated to UMM sites

23 CNSC Subject Matter Experts
With direct regulatory effort at UMM sites

CNSC Staff Conclusions

All UMM sites operated safely in 2022

Events	2022 values	(2021 values)	Compliance Activities
Environmental Action Level Exceedances	5↑1	9↓17	25 CNSC Compliance Inspections
Radiological Action Level Exceedances	2↑1	5↔5	79 CNSC Notices of Non-Compliance (NNCs)
Reportable Releases to the Environment			1 Order issued
Lost-Time Injuries			The Order issued concerned the volume of waste rock in a rock pile being over approved limits and did not pose a risk to communities.

The Order, NNCs and events did not have an impact on safety at UMM sites

<p>Environmental Releases</p> <p>Releases All releases to the environment are treated and must be under regulatory limits to ensure the environment is safe. In 2022, the highest release was 16.3% of the release limit.</p> <p>16.3%</p>	<p>Radiation Doses</p> <p>The Public Doses to the public from all active mines and mills are negligible. These doses are well below the regulatory limit of 1 mSv/y.</p> <p>Nuclear energy workers (NEWs) The maximum effective dose received by a NEW in 2022 was 7.14 mSv at McArthur River, below the 50 mSv per year regulatory limit.</p> <p>14.3%</p>
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<p>Indigenous Engagement</p> <p>CNSC staff worked with Indigenous Nations and communities to identify opportunities for formalized and regular engagement throughout the lifecycle of UMM sites. In 2022 CNSC staff:</p> <ul style="list-style-type: none"> - Met with nations and communities who had concerns from the 2021 ROR. - Participated in the Northern Saskatchewan Environmental Quality Committee meeting in La Ronge. - Conducted outreach at communities near UMM sites. 	<p>Independent Environmental Monitoring Program (IEMP)</p> <p>An IEMP sampling campaign was conducted at 1 UMM site in 2022: Rabbit Lake. Analysis of samples indicate that the environment is protected.</p> <p>Scan the QR code to the right see all of the IEMP data to date.</p>
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Regulatory Efforts

- 16 inspections in 2022 (64%) were performed on-site
- All instances of non-compliance identified were of low risk and low safety significance, with the exception of 2 non-compliances which were identified as medium risk with low safety significance

	2018	2019	2020	2021	2022
Number of Inspections	26	20	17	18	25
Notices of non-compliances	31	23	11	19	79
Orders	0	0	0	0	1



CNSC inspector verifying licensee performance at Cameco's Key Lake Operation, 2022 Source: CNSC



Collaboration with the Province of Saskatchewan

- CNSC staff actively collaborate with provincial regulators in Saskatchewan
- In particular:
 - Ministry of Environment
 - Ministry of Labour Relations and Workplace Safety
 - Ministry of Energy and Resources
- Work on updating the memorandum of understanding with the Government of Saskatchewan is underway
- Financial guarantees for uranium mines and mills located in Saskatchewan are reviewed collaboratively, and are payable to the Government of Saskatchewan

Canadians benefit from Provincial/Federal regulatory collaboration

Reportable Events in 2022

REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills, requires licensees to report to CNSC staff on various events.

In 2022, there were:

- 7 action level (AL) exceedances:
 - 5 environmental action level exceedances
 - *2 radiological action level exceedances
- 9 spills
- 5 lost time injuries

CNSC staff reviewed all event reports and are satisfied with Licensee responses

* *Cameco's investigation into one action level reached at the Cigar Lake Operation revealed that the worker did not receive the majority of the dose recorded on a dosimeter.*

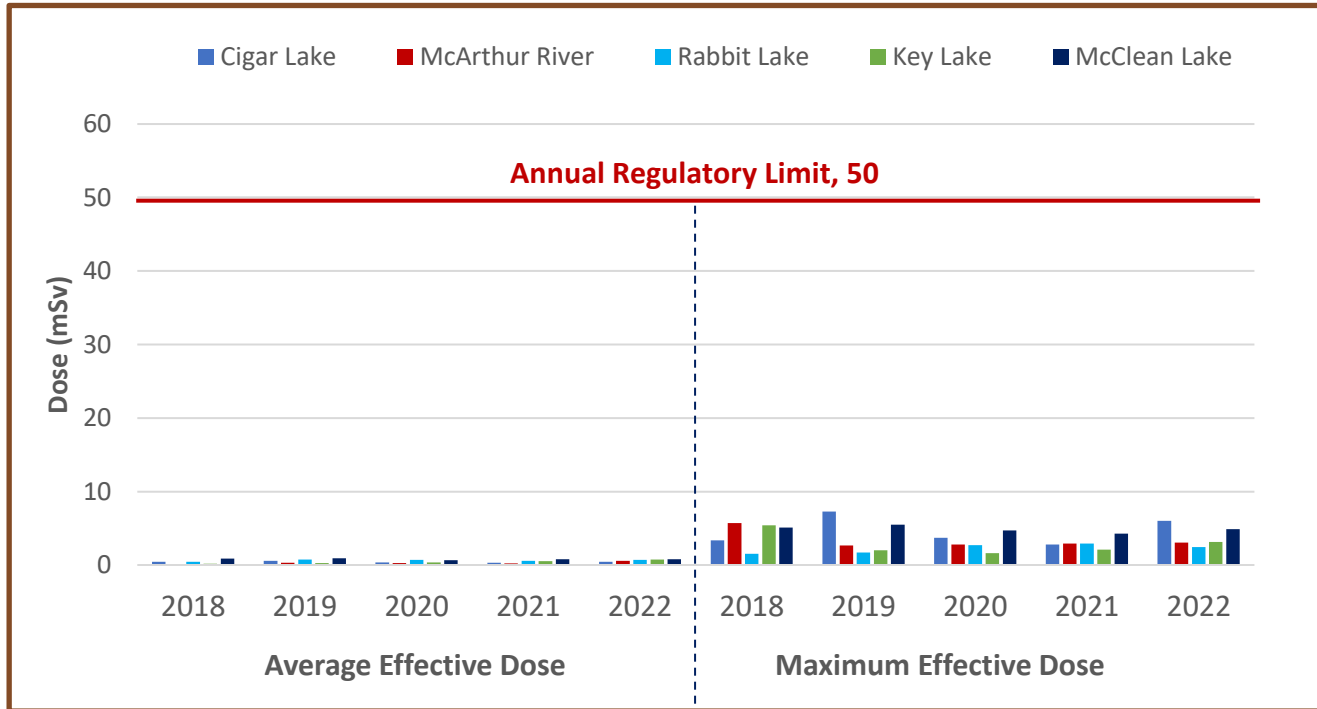


Radiation Protection

Data from tables 2.3 and 2.4 in CMD 23-M27

Uranium Mine / Mill Site	SCA rating
Cigar Lake	BE*
McArthur River	SA
Rabbit Lake	SA
Key Lake	SA
McClellan Lake	SA

* Cigar Lake's rating is further described on Slide 12



Radiation protection programs implemented by licensees were consistent with ALARA principles

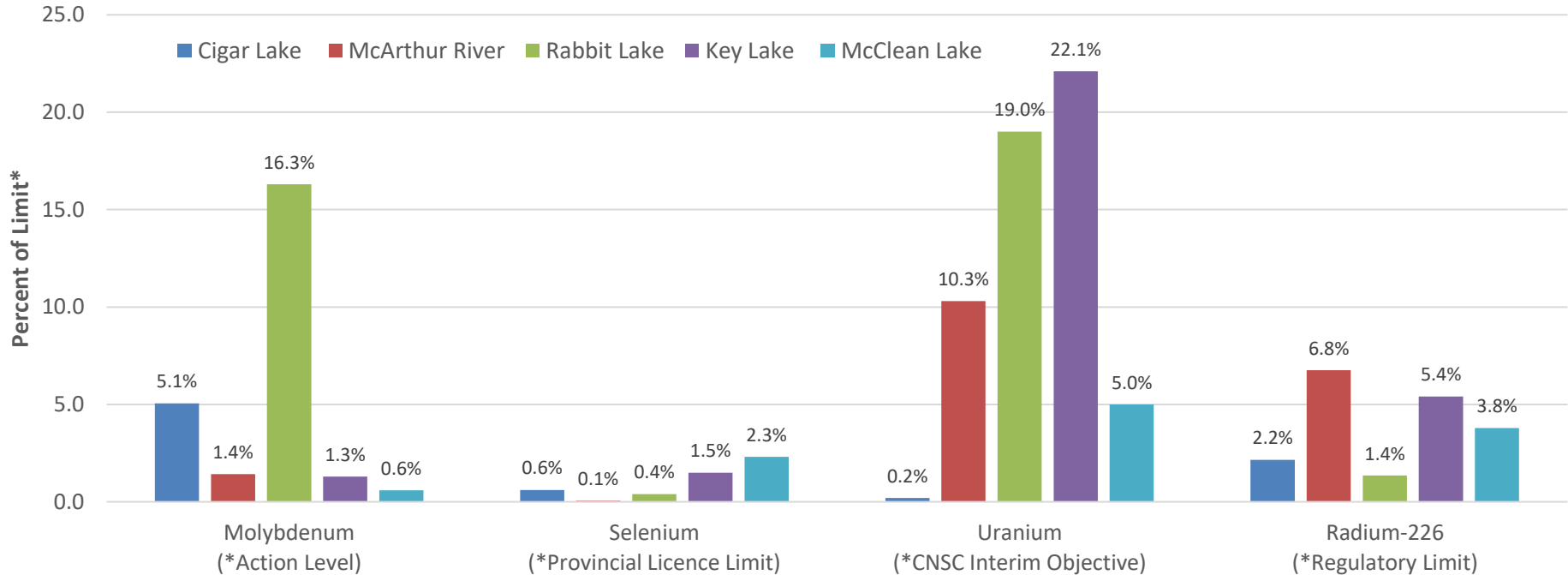


Environmental Protection

- Licensees are required to implement environmental protection programs, which include a set of action levels and regulatory release limits
- Action levels ensure early detection of potential problems
- No exceedances of regulatory release limits in 2022
- CNSC staff concluded the licensee's environmental protection programs were effectively implemented and met all regulatory requirements

Environmental Protection

Data from tables 2.5 to 2.8 in CMD 23-M37



All licensing basis limits were respected in 2022

Conventional Health and Safety

- Conventional health and safety programs were effectively implemented
- CNSC staff rated the conventional health and safety SCA at all 5 operating facilities as satisfactory in 2022

	Cigar Lake	McArthur River	Rabbit Lake	Key Lake	McClellan Lake
Lost-time injuries ¹	0	0	1	1	3
Severity rate ²	4.18	0	0	0	28.6
Frequency rate ³	0	0	0	0.2	0.8
Total recordable incident rate ⁴	2.54	2.76	3.47	1.76	2.9

¹An injury that takes place at work and results in the worker being unable to return to work for a period of time.

²A measure of the total number of days lost to injury for every 200,000 person-hours worked at the facility.

³A measure of the number of LTIs for every 200,000 person-hours worked at the facility.

⁴A measure of the number of fatalities, lost-time injuries and other injuries requiring medical treatment for every 200,000 person-hours worked at the facility.

Cigar Lake's Performance in 2022

- For 2022, CNSC staff have assigned ratings of 'Below Expectations' to Cigar Lake in the SCAs of 'Management System' and 'Radiation Protection'
- These ratings derive from:
 - A Radiation Protection focused inspection where numerous non-compliances were identified with Cameco's implementation of their Radiation Protection program
 - Management System failures identified across multiple compliance activities, including Cameco's management of waste rock Stockpile 'C'
 - No consequences to persons or the environment resulted from these findings
- In response, CNSC staff have increased oversight, increased information-sharing with Provincial regulators, and are conducting follow-up activities on Cameco's corrective actions, via e.g. a reactive focused inspection



CNSC Staff Assessment

Safety and Control Area	Cigar Lake	McArthur River	Rabbit Lake	Key Lake	McClellan Lake
Management system	BE	SA	SA	SA	SA
Human performance management	SA	SA	SA	SA	SA
Operating performance	SA	SA	SA	SA	SA
Safety analysis	SA	SA	SA	SA	SA
Physical design	SA	SA	SA	SA	SA
Fitness for service	SA	SA	SA	SA	SA
Radiation protection	BE	SA	SA	SA	SA
Conventional health and safety	SA	SA	SA	SA	SA
Environmental protection	SA	SA	SA	SA	SA
Emergency management/fire protection	SA	SA	SA	SA	SA
Waste management	SA	SA	SA	SA	SA
Security	SA	SA	SA	SA	SA
Safeguards and non-proliferation	SA	SA	SA	SA	SA
Packaging and transport	SA	SA	SA	SA	SA



Independent Environmental Monitoring Program (IEMP)

- Builds trust with Indigenous Nations and Communities and the public via an independent, technical and accessible environmental sampling program
- Supports ongoing compliance verification activities
- In 2022, samples collected in publicly accessible areas near the Rabbit Lake operation
- In consultation with traditional land users, samples included:
 - Water
 - Labrador tea, wild blueberries
 - Fish, multiple species

There were no IEMP results of concern

CNSC Staff and YNLR Staff water sampling on Wollaston Lake, SK 2022. Source: CNSC Staff



IEMP results provided on the CNSC website at:
www.nuclearsafety.gc.ca/IEMP

Indigenous Engagement Activities

CNSC Staff:

- Participated in approximately 95 engagement activities
- Attended culture camps hosted by English River First Nation and Kineepik Métis Local in fall of 2022
- Attended Treaty Day celebrations in Clearwater River, Buffalo River, and Birch Narrows Dene Nations

2022 ROR Meeting, Saskatoon, September 2023:

- Discussed all sites presented in the 2022 UMM ROR and information on future and historic projects
- Hybrid presentation with opportunities for all participants to ask questions throughout
- CNSC - Ya-Thi Néné Joint Presentation on the 2022 IEMP at Rabbit Lake, SK



CNSC Outreach & Consultation with ERFN for the Wheeler River Project Environmental Assessment - September 2022. Source: CNSC

Indigenous Engagement Activities

CNSC Staff:

- Signed a long-term Terms of Reference with the Ya-Thi Néné Lands and Resource Office (YNLR) in June 2022
- Held meetings with Indigenous Nations and communities on the CNSC's new Indigenous and Stakeholder Capacity Fund
- Attended in-person community tours in November 2022 regarding Cameco's 2023 licence renewals
- Attended Orano's Cluff Lake Operation site tour in September 2022 alongside a member of the Clearwater River Dene Nation



CNSC Outreach & Consultation at the KML Culture Camp Learning How to Fillet a Fish - September 2022

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



Interventions

Key Themes

Intervenors generally appreciate the regulatory and engagement work of CNSC staff, as reported on in the 2022 UMM ROR

Co-development of the ROR engagement session agenda should be continued to ensure space for Indigenous presentations and time for meaningful discussion

Intervenors are interested in how CNSC might include evaluation of Indigenous Community Comprehension to gauge meaningful engagement and trust

Intervenors feel that increased access to raw data would help the public to better understand the significance of reportable events



Update on 2022 Inspector's Order - Cigar Lake Operation

- On October 28th, 2022, a CNSC Inspector's Order was issued regarding the volume of waste rock Stockpile 'C' being in excess of the limit
- Saskatchewan Ministry of Environment (MOE) also took enforcement action; CNSC and MOE worked collaboratively
- In May 2023 CNSC staff accepted Cameco's Plan to return to compliance and closed the Order
- October 14, 2023 - Cameco reported Stockpile 'C' volume reduced to 406,648 m³ from the reported maximum of 413,172 m³
- CNSC staff will continue to verify Cameco's work on Stockpile 'C' until it is returned to compliance with volume limits

No impacts to
persons or to the
environment –
ongoing oversight

2023 Inspector's Order - Rabbit Lake Operation

- On October 26th, 2023, a CNSC Inspector's Order was issued regarding the use of expired Personal Protective Equipment (PPE) by the Rabbit Lake Emergency Response Team (ERT)
- The Order prohibited work involving open flame, heat production and/or sparks ('hot work') and required an immediate plan for obtaining non-expired PPE, among other actions
- In response, Cameco has
 - Shipped ERT PPE from other sites to allow the Rabbit Lake ERT to resume full capabilities
 - Begun an investigation into why this non-compliance was not reported to the CNSC
 - Begun to develop corrective actions, preventative measures, to prevent re-occurrences
- Cameco was also requested to examine ERT PPE across all of its CNSC-licensed sites
- CNSC staff have informed Saskatchewan regulators, Indigenous Nations and Communities

No impacts to persons or to the environment – CNSC response ongoing



Conclusions

- Releases of radioactive and hazardous substances to the environment were below regulatory limits
- Radiological doses to the public and to workers were below regulatory limits
- Lost-time injuries were consistent with other Saskatchewan mining sectors
- Licensees took appropriate follow-up actions on all reportable events
- Canada's international obligations with respect to UMM sites were fulfilled



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ANNEX I – ACTION LEVELS & REGULATORY LIMITS

Regulatory Limits and Action Levels

