



# REGDOC-2.9.2, *Controlling Releases to the Environment*

Commission Meeting  
February 21, 2024

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CMD 24-M5.A

## Brief Commission on:

Actions taken to address September 2022 Commission decision and direction

## Request acceptance of:

REGDOC-2.9.2, *Controlling Releases to the Environment*



- ➡ Background
- ➡ Addressing the Commission's Direction
  - clarity of terms
  - implementation
  - cost benefit analysis
- ➡ Residual Issues
- ➡ Conclusion and Recommendation



- Draft REGDOC-2.9.2 presented to Commission in September 2022
- Paragraph 44 of September 2022 decision directed staff and industry to:
  - “ – *clarify terms used in the REGDOC*
  - *clarify expectations for implementing the REGDOC*
  - *address concerns regarding regulatory impacts and cost/benefit analysis* ”



- Consultation activities:
  - workshops (3)
  - presentation to the CANDU Owner's Group
  - several licensee-specific meetings to discuss specific concerns
  - written correspondence

## Clarity of Terms

- REGDOC text modified to enhance clarity while maintaining sector-neutrality
  - modifications primarily focused on section 5.1, *Requirements for establishing and documenting proposed release limits*
- Definitions updated:
  - revised the definition of *maximum predicted design release characteristics*
  - established a definition for both *licensed limit* and *licensed release limit*

## Clarify Expectations for Implementation

- CNSC staff provided written and verbal clarity and guidance, including:
  - applies only to controlled releases
  - flexibility for existing licensees:
    - existing facilities met technology requirements at time of original licence
    - current approved release limits and action levels allowed to conclude until their next review cycle (typically every 5-years)
    - licensees can decide to wait to implement, to align with the next 5-year review of their environmental risk assessments or periodic safety reviews
- Regulatory certainty for licensee-specific considerations, provided when requested

## Cost Benefit Analysis (1/2)

- CNSC staff used:
  - *Policy on Cost-Benefit Analysis*
  - *Canadian Cost-Benefit Analysis Guide: Regulatory Proposal*
  - *Standardized Cost Model* from the Organization of Economic Co-operation and Development
  - hourly wages from Statistics Canada
- Costs were grouped thematically, assessed using expert judgement and compared against submissions from other licensees



## Cost Benefit Analysis (2/2)

- \$3.3 million is the net present day value of projected costs to 2034
  - average annual cost of \$471,499, spread over the implementing existing licensees
  - less than \$1M per year is considered a 'low impact regulatory proposal'
- Benefits are qualitative



## Resource Management

- Reduces potential duplication for compliance (CNSC/Environment and Climate Change Canada/provincial) and allows better utilization of government resources
- Allows for consideration of Regulations under the *Fisheries Act*
- Converts cyclical updates of derived release limits to one-time licensed release limits based on the approved facility design



## Regulatory Cooperation

- Promotes cooperation with provincial authorities on hazardous substance releases
- Pollution prevention is the priority approach to environmental protection under the *Canadian Environmental Protection Act*



## Regulatory Clarity

- Clarifies requirements and provides guidance to meet *General Nuclear Safety and Control Regulations* 12(1)(f)
- Standardizes existing practices, documenting expectations for new and existing facilities
- Connects the regulatory control of releases to the licensing basis



## Harmonization

- Adopts international standards and best practices
- Addresses the 2019 International Atomic Energy Agency's Integrated Regulatory Review Service recommendation on authorizing optimized releases

- CNSC Staff noted the following expressed by licensee staff:
  - support for the importance of REGDOC-2.9.2 in establishing world-class environmental performance expectations
  - REGDOC-2.9.2 is beneficial and necessary for new facilities
  - comprehension of how to use the document at a technical level

1

Use of design-based limits versus exposure-based derived release limits for nuclear substances

2

Perceived misalignment with CSA N288 series documents

3

Cost of implementation at existing facilities

4

Harmonizing with provincial authorities (release of hazardous substances)

Site and licensee-specific issues are typically resolved during ongoing assessment and implementation discussions once REGDOCs are accepted by the Commission

1

Use of design-based limits versus exposure-based derived release limits for nuclear substances

Industry Concern	CNSC Staff Disposition
<p>Use of a limit not based on the current derived release limit (DRL) methodology would punish good performers with stricter requirements</p>	<ul style="list-style-type: none"> <li>• The REGDOC approach is consistent with international practices and continuous improvement</li> <li>• Paragraph 43 of the 2022 Commission decision on REGDOC-2.9.2 noted that: <i>“The Commission is supportive of the objectives of the REGDOC, which are to address shortcomings with the current DRLs and to clarify requirements while providing guidance for controlling releases to the environment.”</i></li> <li>• Licensed release limits (LRLs) to be based on the facility design - either from the design itself or from historical performance</li> <li>• Deriving LRLs from design specifications eliminates concerns regarding good performance</li> </ul>

2

Perceived misalignment with CSA N288 series documents

Industry Concern	CNSC Staff Disposition
<p>REGDOC-2.9.2 does not align with published CSA standards</p>	<ul style="list-style-type: none"> <li>Paragraph 43 of the 2022 Commission decision noted the Commission's satisfaction that:  <i>"the proposed REGDOC aligns with CSA Group standards."</i></li> <li>Should draft REGDOC-2.9.2 be accepted by the Commission for publication, CNSC staff will contribute to cyclical revisions of CSA Group standard N288 series documents to ensure alignment</li> </ul>

## 3

## Cost of implementation at existing facilities

Industry Concern	CNSC Staff Disposition
<p>The document benefits do not outweigh the implementation cost to existing facilities</p> <p>No benefit to the environment from implementation at existing facilities</p>	<ul style="list-style-type: none"> <li>• CNSC staff have concluded that the non-monetary benefits outweigh the implementation costs</li> <li>• Implementation costs have been minimized to the extent practicable               <ul style="list-style-type: none"> <li>• no physical changes to existing facilities' treatment systems or techniques required</li> </ul> </li> <li>• CNSC staff are open to discussing an extended implementation timeframe on a case-by-case basis</li> </ul>



## 4 Harmonizing with provincial authorities (release of hazardous substances)

Industry Concern	CNSC Staff Disposition
<p>How harmonization with provincial authorities on hazardous substances would be achieved</p>	<ul style="list-style-type: none"><li>• The draft REGDOC provides a structure for provincial authorities to understand the CNSC's rationale and approach</li><li>• Discussions with provincial authorities is ongoing</li><li>• Acceptance of this REGDOC would provide a firm foundation for enhancing our relationships with provincial authorities</li></ul>

- CNSC staff have actioned the Commission direction from September 2022
- Draft REGDOC-2.9.2 has been revised to enhance clarity and specificity
- Next steps:
  - if accepted, publish on CNSC website
  - ongoing discussion with licensees on licensee-specific implementation plans
  - timing of implementation will be tailored to the specific licensees

## CNSC staff recommend:

The Commission accept **REGDOC-2.9.2, *Controlling Releases to the Environment*** for publication and use.



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# Supplemental Slides: Additional Background

- Clarifies requirements and provides guidance for controlling releases to the environment :
  - use of best available technology and techniques, economically achievable (BATEA)
  - establishing and implementing licensed release limits
  - establishing and implementing environmental action levels
  - commissioning of new treatment systems and confirming their performance
  - implementing adaptive management
- Applies to controlled releases during normal operations from Class I facilities and uranium mines and mills
  - applies to other facilities in a graded manner

- *General Nuclear Safety and Control Regulations*
  - 12 (1) (f) every licensee shall take **all reasonable precautions to control the release of radioactive nuclear substances or hazardous substances** within the site of the licensed activity and into the environment as a result of the licensed activity
- *Class I Nuclear Facilities Regulations: section (6)*
  - (g) proposed commissioning program for systems and equipment that will be used at the nuclear facility
  - (h) the **effects on the environment and the health and safety of persons** that may result from the operation and decommissioning of the nuclear facility, and the **measures that will be taken** to prevent or mitigate those effects
  - (i) the proposed location of **points of release, the proposed maximum quantities and concentrations,** and the anticipated volume and flow rate of releases of nuclear substances and hazardous substances into the environment, including their physical, chemical and radiological characteristics
  - (j) the **proposed measures to control releases** of nuclear substances and hazardous substances into the environment
- Similar text in *Uranium Mines and Mills Regulations*

- 2012 Discussion paper on establishing release limits and action levels
  - extensive feedback from non-industry groups and one environmental group
  - What We Heard Report (2012)
  - multi-stakeholder workshop (2013)
- REGDOC development commenced (2013)
- Publication of REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* (2017)
- Consultation on draft REGDOC-2.9.2 (March – August 2021)
  - info-sessions (April 2021)
- Indigenous Nations and communities invited to comment, and CNSC staff provided awareness and updates as an item during monthly meetings
- Workshop with industry commenters (February 2022)





Supplemental Slides:  
Examples on use of  
draft REGDOC-2.9.2



- CNL submitted a preliminary event report to the CNSC on June 6, 2022, indicating that the composite effluent sample exceeded the weekly release limit for copper
- CNL performed an investigation and determined that the source of elevated copper was due to brass components on the cooling loop that had lost their protective layer over time and started to corrode
- CNL isolated the source of contamination and implemented corrective actions
- CNL assessed that there was no impact to the environment as a result of the exceedance
- CNSC staff presented the event to the Commission as an EIR CMD 22-M38 on June 28, 2022
- The licensed release limit was derived in accordance with methodology in REGDOC-2.9.2 (design-based) and was effective in identifying a loss of control of part of the Environmental Protection Program
- CNL responded to the licensed release limit exceedance in accordance with REGDOC-2.9.2 and restored the effectiveness of the program

- NexGen Rook I Project
  - submitted a BATEA assessment for their construction phase effluent treatment plant following the requirements and guidance in draft REGDOC-2.9.2
- Other new facilities committed to performing and submitting a BATEA assessment aligning with draft REGDOC-2.9.2:
  - Denison Wheeler River Project
  - OPG Darlington New Nuclear Project

Requirements and guidance for BATEA, documented in draft REGDOC-2.9.2, resulted in significantly reduced back-and-forth communications between applicants and CNSC staff