



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

Canada



# Designating Laboratory Analysts

Commission Meeting  
March 2, 2023  
CMD 23-M8.A

e-Doc #6895651 (PPTX)  
e-Doc #6980769 (PDF)

# Agenda

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## 1. Context

What is the current situation?

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## 2. Considerations

Why designate analysts under the *Nuclear Safety and Control Act* (NSCA)?

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## 3. Benchmarking

Proposed qualifications for designated analysts

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## 4. Recommendations

For approval by the Commission

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## 5. What's Next

This is how we plan to move forward





# Purpose

## CNSC staff seek the Commission's

- Approval of the designated analyst qualifications, and
- Authorization of the following Designated Officers to designate any person whom the designated officer considers qualified as an analyst:
  - the *Vice-President (VP) of the Technical Support Branch (TSB) and Chief Science Officer (CSO)* and
  - the *Director General (DG) of the Directorate of Environmental and Radiation Protection and Assessment (DERPA)*



# CNSC Laboratory

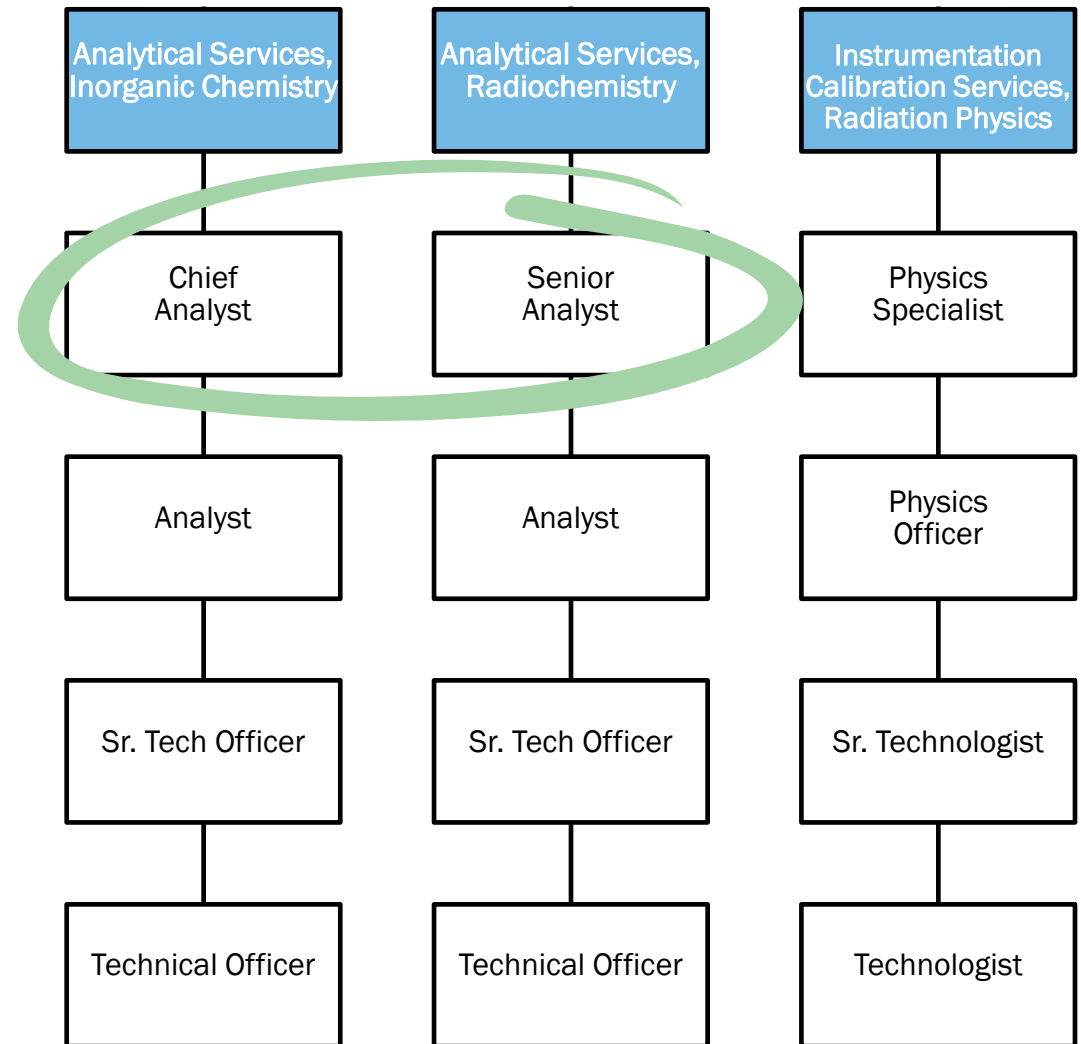
The *Nuclear Safety and Control Act* (NSCA) authorizes the Commission to establish and maintain laboratories.

The Canadian Nuclear Safety Commission (CNSC) laboratory holds two CNSC licences and maintains capabilities in two distinct service lines:

- Calibration services of radiation instruments
- Analytical or sample analysis services

# Analytical Services

- We are proposing 2 senior analyst positions for designation
- The analytical services section of the laboratory provides sample analysis for:
  - compliance verification activities
  - environmental monitoring through the Independent Environmental Monitoring Program (IEMP)
  - safeguards and nuclear forensics material characterization of various sample types
- This year, analytical services will also be seeking ISO 17025 accreditation of several of its analytical methods



# Considerations

The NSCA provides a legal basis for the Commission to:

- Designate analysts
- Authorize a Designated Officer (DO) to designate analysts on its behalf

## Why designate an analyst?

**To support compliance and nuclear forensic activities.**

- A designated analyst can sign and issue a certificate stating the result of the analysis, which is admissible in Court as evidence. Without the designation of an analyst, such a certificate cannot be issued.
- Certification of laboratory results by designated analysts will provide the Commission, national stakeholders, the public and courts with further assurance that qualified CNSC staff performed the sample analysis and confirmed the results.



# Laboratory Analysis

## in Support of Compliance Activities

2013

The lab supported regulatory activities by analyzing and interpreting results of samples taken during the clean-up of the Shield Source Inc. facility

2014

The lab was asked to explain results of soil samples taken around the GE (now BWXT) facility in Toronto

2020

During decommissioning of the SRC Slowpoke, the lab analyzed concrete core samples to verify that the materials met the requirements for unconditional release



Laboratory sample analysis and result interpretation supports compliance activities and regulatory decision making

# Laboratory Analysis

## in Support of Nuclear Forensic Material Characterization and Criminal Investigations

### Canadian National Nuclear Forensic Library

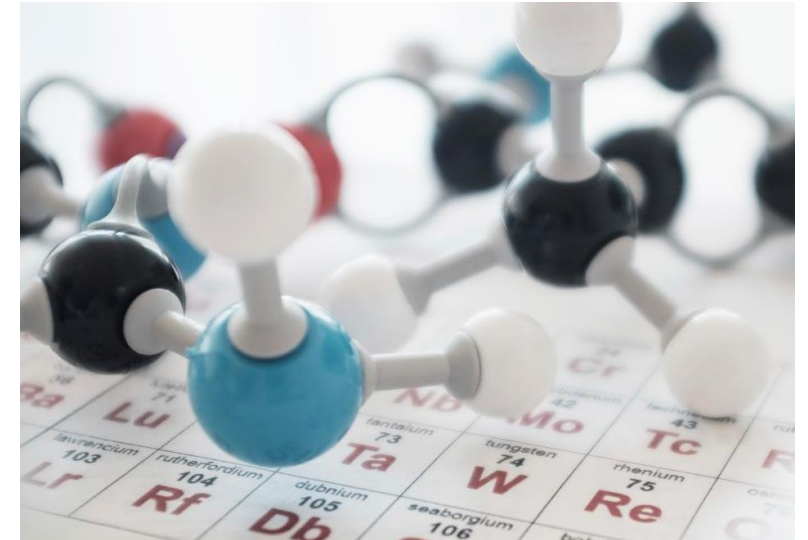
The CNSC Laboratory analyzed 307 samples of uranium ore concentrate (UOC) from 20 manufacturers worldwide for 60 elements. The trace elemental patterns can be used as “fingerprints” for determining origin.

### Internationally Organized Nuclear Forensic Exercises

The CNSC laboratory participated in 4 collaborative materials exercises (CMX) organized by the International Nuclear Forensic Working Group, from 2014 to 2020.

### Analyses Of Evidentiary Samples (Exhibits)

The CNSC laboratory conducted analyses to support 2 separate investigations led by the Canada Border Services Agency (CBSA) in 2014 and 2018, involving illicit shipments of regulated material quantities into and out of Canada.



Designation provides benefits to the CNSC in the event we are called upon to support a prosecution of an offence under the NSCA



# What Is The Impact?

## of **HAVING** designated analysts?

- Small administration effort to implement and maintain designations
- One-time need to communicate changes internally and externally with stakeholders
- No change to lab staff qualifications or tasks

## of **NOT HAVING** designated analysts?

- Only a designated analyst can issue a certificate stating the result of the analysis, which is admissible as evidence in court

Designation allows the certified report to be admitted into evidence, without the Court having to recognize the expert witness status of analyst, since the analyst is presumed qualified by virtue of the designation



# Proposed Qualifications

The qualifications of an analyst are not defined in the NSCA, nor the CNSC Regulations. We are recommending the following **minimum qualifications** based on benchmarking information:

Master's degree in science related to the work to be carried out

Training and experience, sufficient to perform the duties of the position, including :

- on-the-job training relevant to the duties of an analyst
- practical experience related to the work to be performed

These qualification are already required to perform the duties of the senior analyst roles and are documented in our work description forms

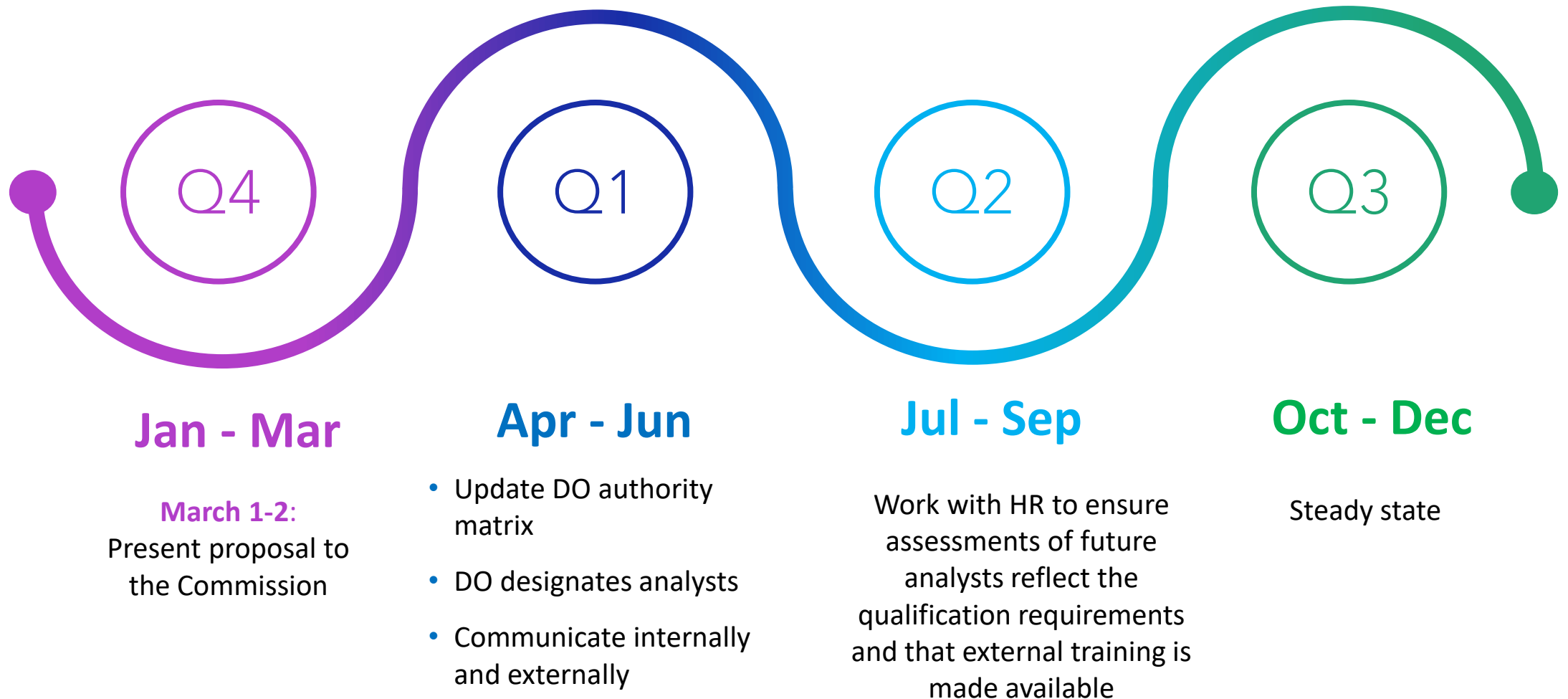


# Recommendations

CNSC staff recommend that the Commission:

- Approve the designated analyst qualifications; and
- Authorize the following Designated Officers to designate any person whom the designated officer considers qualified as an analyst under section 28 of the NSCA:
  - the *VP of the TSB and CSO*, and
  - the *DG of DERPA*

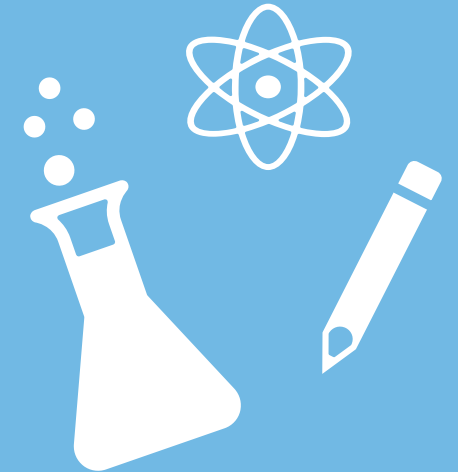
# Proposed Timeline for Implementation



Questions?

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Thank you



# Annex A – National Benchmarking

Act	Definition of Analyst	Authority	Qualifications
<a href="#"><u>Cannabis Act</u></a>	An individual who is designated as an analyst under <b>section 130</b>	<b>131 (2)</b> <i>An analyst who has made an analysis or examination of a substance or sample submitted under subsection (1) may prepare a certificate or report stating that they have analyzed or examined it and setting out the results of their analysis or examination</i>	<a href="#"><u>Qualifications for Designation as Analyst Regulations</u></a>
<a href="#"><u>Controlled Drugs and Substances Act</u></a>	A person who is designated as an analyst under <b>section 44</b>	<b>45 (2)</b> <i>An analyst who has made an analysis or examination under subsection (1) may prepare a certificate or report stating that the analyst has analysed or examined a substance or a sample thereof and setting out the results of the analysis or examination</i>	<a href="#"><u>Qualifications for Designations as Analysts Regulations</u></a>
<a href="#"><u>Nuclear Safety and Control Act</u></a>	A person designated as an analyst under <b>section 28</b>	<b>55 (1)</b> <i>Subject to this section, a certificate purporting to be signed by an analyst, stating that the analyst has analysed or tested a substance or product and stating the result of the analysis or test</i>	No Regulations pertaining to the qualifications of designated analysts

# Annex B – International Benchmarking

Organization	Qualifications for analyst equivalent
<a href="#"><u>United Nations Office of Drugs and Crime (UNODC)</u></a>	<p><i>Staff Skill Requirements And Equipment Recommendations For Forensic Science Laboratories</i>, UN, New York, 2011, states that the minimum education for a forensic chemist is:</p> <p>“Level of education recommended BSc or MSc with major in chemistry (or equivalent)”</p>
<a href="#"><u>Federal Bureau of Investigation (FBI)</u></a>	<p>Minimum education requirements for the Designated Forensic Examiner (FE) is:</p> <p>a BSc in Chemistry</p>