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**ORIGINAL/ORIGINAL**

**CMD : 23-M8**

**Date signed/Signé le : 08 FEBRUARY 2023**

Exercise Exceptional Powers for  
Designation of Analyst

Exercer des pouvoirs exceptionnels  
pour la désignation d'analyste

## **Designation of Analyst**

## **La désignation d'analyste**

Commission Public Meeting

Réunion publique de la Commission

Scheduled for:  
02 March 2023

Prévue pour :  
2 mars 2023

Submitted by:  
Canadian Nuclear Safety Commission  
(CNSC) Staff

Soumise par :  
Le personnel de la Commission  
canadienne de sûreté nucléaire  
(CCSN)

## Summary

This Commission Member Document (CMD) presents information about designating analysts under the *Nuclear Safety and Control Act* (NSCA).

CNSC staff recommend the Commission take the following actions:

- Approve the designated analyst qualifications
- Authorize the following Designated Officers (DO) to designate any person whom the designated officer considers qualified as an analyst under section 28 of the NSCA:
  - 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)*

The following item is attached:

- Sample Designated Analyst Certificate

## Résumé

Le présent document à l'intention des commissaires (CMD) présente de l'information sur la désignation des analystes aux termes de la *Loi sur la sûreté et la réglementation nucléaires* (LSRN).

La Commission pourrait considérer prendre les mesures suivantes :

- Approuver les qualifications des analystes désignés
- Autoriser les fonctionnaires désignés (FD) suivants à désigner toute personne que le FD estime qualifiée pour remplir les fonctions d'analyse, conformément à l'article 28 de la LSRN :
  - *le vice-président de la Direction générale du soutien technique et le conseiller scientifique principal*
  - *la directrice générale de la Direction de l'évaluation et de la protection environnementales et radiologiques*

La pièce suivante est jointe :

- Exemple de certificat d'analyste désigné

**Signed/signé le**

08 February 2023



Tadros, Haidy  
I am approving this document  
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Haidy Tadros

**Director General**

Directorate of Environmental and Radiation Protection and Assessment

**Directrice générale de la**

Direction de l'évaluation et de la protection environnementales et radiologiques

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## EXECUTIVE SUMMARY

Recognizing the importance of reconciliation and acknowledging the history of Indigenous peoples in Canada, CNSC staff recognize that the land on which the CNSC Laboratory is situated and operates is in the unceded traditional territory of the Algonquin Anishnaabeg People. CNSC staff thank the Algonquin Anishnaabeg People for their care and stewardship of this land since time immemorial.

The Commission has the authority to designate analysts in accordance with [section 28](#) of the *Nuclear Safety and Control Act* (NSCA). Designating analysts at the CNSC Laboratory will support regulatory compliance and characterization of nuclear forensics material by authorizing designated laboratory staff to certify results. These results would be admissible as evidence in the prosecution of an offence under the NSCA.

The NSCA also provides a legal basis for the Commission to define the qualifications of an analyst. Based on national and international best practices, CNSC staff propose that an individual must have the following qualifications to be designated as an analyst:

- (a) master's degree in science related to the work to be carried out
- (b) training and experience sufficient to perform the duties of the position:
  - (i) on-the-job training relevant to the duties of an analyst
  - (ii) practical experience related to the work to be performed

CNSC staff also recommend that the Commission authorize the following designated officers (DOs) to designate any person whom they consider qualified as an analyst under section 28 of the NSCA:

- the CNSC's Vice-President, Technical Support Branch, and Chief Science Officer
- the CNSC's Director General, Directorate of Environmental and Radiation Protection and Assessment

Should the Commission authorize the aforementioned DOs to designate any person whom they consider qualified as an analyst under the NSCA, 2 senior laboratory positions would be proposed for designation: Senior Analyst and Chief Analyst.

# 1 OVERVIEW

## 1.1 Background

Over the past 12 years, the CNSC laboratory has consistently provided high quality sample analysis results for environmental and safeguards compliance verification, as well as for nuclear forensics material characterization.

The CNSC laboratory is currently pursuing accreditation to [ISO/IEC 17025](#) from the [Standards Council of Canada \(SCC\)](#). This accreditation enables laboratories to demonstrate that they operate competently, according to world-recognized standards and generate valid, scientifically defensible results, thereby promoting confidence in the laboratory work both nationally and internationally.

In addition to demonstrating the CNSC's laboratory capacity to deliver trusted results through accreditation, the CNSC would also benefit from having designated analysts who can certify analysis results admissible as evidence in the prosecution of an offence under the NSCA.

The accreditation of testing methods, in conjunction with having designated analysts who can certify results, will strengthen the CNSC's laboratory's ability to support regulatory compliance and nuclear forensics activities. These activities include the analysis of licensed facility swipe samples and environmental samples, as well as nuclear forensics material characterization.

The appropriate legislated mechanisms are in place for this initiative. Pursuant to [section 28 of the NSCA](#), the Commission has the power to designate, as an analyst, any person whom the Commission considers qualified. In addition, paragraph [37\(2\)\(e\) of the NSCA](#) enables the Commission to authorize a DO to designate analysts on its behalf.

## 1.2 Highlights

### *Main objective*

The main driver for this initiative relates to the fact that a designated analyst can sign and issue a certificate of results which is admissible as evidence in the prosecution of an offence under the NSCA. Without this designation, 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.

Although a prosecution under the NSCA or an event requiring nuclear forensics material characterization is not expected to be a frequent occurrence, the ability to issue a certificate would enable laboratory results to be entered as evidence in a court proceeding. A designation of ‘analyst’ under the NSCA would also confer additional credibility to the analyst given the established qualifications required for the designation.

### *Examples of CNSC Laboratory support to other federal activities*

With respect to nuclear forensics material characterization examples, there were two separate investigations involving illicit shipments of regulated material quantities into and out of Canada led by the Canada Border Services Agency (CBSA), one in 2014 and another in 2018. The CNSC laboratory was asked by CBSA to provide analysis results of seized materials in support of law enforcement investigation. These results were used to support the CNSC [designated officers’ decisions](#) on the violation of the [Nuclear Non-proliferation Import and Export Control Regulations](#). If a prosecution had proceeded, a designated analyst could have issued a certificate stating the result of the analysis or test or provided testimony as the qualified analyst on the file.

Laboratory staff conduct material characterization analyses related to building and maintaining Canada’s nuclear forensic capabilities. [To support the CNSC’s establishment of the National Nuclear Forensic Library](#), the laboratory staff analyzed 307 samples of Uranium Ore Concentrate (UOC) from 20 distinct manufacturers worldwide for 60 elements. The trace elemental patterns can be used as “fingerprints” for determining the origin of UOC. The nuclear forensics library is a key tool for comparison during a nuclear forensics analysis to determine radioactive and nuclear material origin. In the unlikely case of terrorist attack or suspicious activity, CNSC designated analysts could provide inter-organizational support by testing found nuclear material and certify material characterization results.

## **2 MATTERS FOR CONSIDERATION**

### **2.1 Proposed Qualifications to Designate an Analyst**

Qualifications for a designated analyst are not defined in the NSCA, nor in the associated CNSC Regulations. [Section 44 \(1\)\(k\) of the NSCA](#) states that the Commission may, with the approval of the Governor in Council, make regulations respecting the qualifications for, and the training and examination of, analysts, inspectors, nuclear energy workers and other persons employed in a nuclear facility or other place where a nuclear substance or prescribed equipment is produced, used, possessed, packaged, transported, stored or disposed of, and prescribing the fees for the examination of analysts, inspectors, nuclear energy workers and such other persons. However, the Commission has not made any such regulations.

Section 2.2 below provides the benchmarking that was carried out in developing the proposed qualifications for a designated analyst under the NSCA. Therefore, CNSC staff propose the following, based on national and international best practices.

An individual must have the following qualifications to be designated as an analyst under Section 28 of the NSCA:

- (a) Master’s degree in science related to the work to be carried out, and
- (b) training and experience, sufficient to perform the duties of the position:
  - (i) on-the-job training relevant to the duties of an analyst,
  - (ii) practical experience related to the work to be performed.

Of note, these qualifications are currently required to perform the duties of the Senior Analyst roles at the CNSC laboratory and as such, the qualifications are verified at the point of hire. Anyone in these positions must at a minimum comply with these mandatory requirements and qualifications.

## 2.2 Benchmarking of Designated Analyst Qualifications

Qualifications for designating analyst have been defined in other Canadian Regulations and by other international governing bodies. Table 1 provides a summary of these qualifications.

Table 1: National and International Qualifications for Designated Analysts

Act or Governing Body	Qualifications
<p><a href="#"><u>Cannabis Act</u></a></p> <p><a href="#"><u>Qualifications for Designation as Analyst Regulations</u></a></p>	<p>“An individual must have the following qualifications in order to be designated as an analyst under section 130 of the <i>Cannabis Act</i>:</p> <ul style="list-style-type: none"> <li>(a) a degree in a science related to the work to be carried out               <ul style="list-style-type: none"> <li>(i) awarded by a Canadian university, or</li> <li>(ii) if awarded by a foreign university, that is recognized by a Canadian university or a Canadian professional association; or</li> </ul> </li> <li>(b) a combination, sufficient to perform the duties of the position, of               <ul style="list-style-type: none"> <li>(i) work experience relevant to the duties of an analyst, and</li> <li>(ii) formal education in a science related to the work to be carried out or other training related to that work.”</li> </ul> </li> </ul>
<p><a href="#"><u>Controlled Drugs and Substances Act</u></a></p>	<p>The Minister may, pursuant to section 44 of the <i>Controlled Drugs and Substances Act</i>, designate a person as an analyst if the person has the following qualifications:</p>



<a href="#">Qualifications for Designations as Analysts Regulations</a>	<p>(a) a degree in a science related to the work to be carried out, awarded by</p> <ul style="list-style-type: none"> <li>(i) a Canadian university, or</li> <li>(ii) a foreign university recognized by a Canadian university or professional association; or</li> </ul> <p>(b) a combination, sufficient to perform the duties of the position, of</p> <ul style="list-style-type: none"> <li>(i) practical experience in the area of responsibility, and</li> <li>(ii) formal education in a science related to the work to be carried out or other training related to that work.</li> </ul>
<a href="#">United Nations Office of Drugs and Crime (UNODC)</a>	<p>“Staff skill requirements and equipment recommendations for forensic science laboratories”, 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="#">Federal Bureau of Investigation (FBI)</a>	<p>Minimum education requirements for the Designated Forensic Examiner (FE) is a BSc in Chemistry</p>

## 2.3 Authorization of Designated Officers (DOs)

CNSC staff recommend that the Commission authorize the following DOs to designate any person whom the DO considers qualified as an analyst under section 28 of the NSCA:

- the *VP of TSB and CSO*, and
- the *DG of DERPA*

This would enable operations to designate new analysts in a timely fashion upon retirement or departure of existing staff.

## 2.4 Designation of Analysts

Should the Commission authorize the aforementioned DOs to designate any person whom the DO considers qualified as an analyst under [section 28 of the NSCA](#), two CNSC laboratory positions would be proposed for designation at this time: Senior Analyst and Chief Analyst. The incumbents in both positions meet the proposed qualifications. Furthermore, assessment of any new analysts would include the qualifications proposed and would be verified before designation.

# 3 OVERALL RECOMMENDATIONS

## 3.1 Recommendations

CNSC staff recommend the Commission:

- Approve the designated analyst qualifications; and

- Authorize the following DOs to designate any person whom the DO considers qualified as an analyst under section 28 of the NSCA:
  - 1) *VP of TSB and CSO*, and
  - 2) the *DG of DERPA*

## REFERENCES

1. Cannabis Act, <https://www.laws-lois.justice.gc.ca/eng/acts/C-24.5/>
2. Controlled Drugs and Substances Act, <https://laws.justice.gc.ca/eng/acts/C-38.8/index.html>
3. Federal Bureau of Investigation (FBI): [FBI — Standards and Guidelines - Forensic Science Communications - January 2005 13](#)
4. ISO17025, <https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>
5. *Nuclear Safety and Control Act*, <http://laws-lois.justice.gc.ca/eng/acts/N-28.3/index.html>
6. Standards Council of Canada, <https://www.scc.ca/en>
7. United Nations Office of Drug and Crime document, “Staff skill requirements and equipment recommendations for forensic science laboratories”, UN, New York, [https://www.unodc.org/documents/scientific/Ebook\\_STNAR\\_02Rev1\\_E.pdf](https://www.unodc.org/documents/scientific/Ebook_STNAR_02Rev1_E.pdf)
8. Nuclear Forensics at the CNSC - <https://nuclearsafety.gc.ca/eng/resources/news-room/feature-articles/nuclear-forensics-at-cnsc.cfm>

## **A. BASIS FOR THE RECOMMENDATION(S)**

### **A.1 Legal Basis**

Paragraph 21 (1)(d) of the NSCA authorizes the Commission to establish and maintain laboratories.

Section 2 of the NSCA defines ‘analyst’ as a person designated as an analyst under Section 28. Pursuant to Section 55 (1) and (2), an analyst performs laboratory analysis and signs and issues a certificate stating the result of the analysis which is admissible as evidence in the prosecution of an offence under the NSCA. The analyst may also be called upon to testify as an expert witness for the purposes of cross-examination.

Section 28 states that the Commission may designate as an analyst any person whom the Commission considers qualified.

Paragraph 37 (2)(e) enables the Commission to authorize a DO to designate analysts on its behalf.

## B. CERTIFICATE OF DESIGNATED ANALYST

### B.1 Sample Certificate

Canadian Nuclear Safety  
Commission  
President



Commission canadienne de  
sûreté nucléaire  
Président

e-Docs No.: 6926900

### CERTIFICATE OF DESIGNATED ANALYST

This is to certify that

**Name**, Title, Laboratory Services Division, DERPA, CNSC is designated as an Analyst by the CNSC pursuant to section 28 of the NSCA.

This certificate authorizes the person identified above to carry out the duty described below:

- Issue 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, as indicated in S. 55(1) of the NSCA.

This certificate expires on \_\_\_\_\_, unless revoked prior to this date.

\_\_\_\_\_  
Peter Elder

\_\_\_\_\_  
Effective date

Vice-President of the Technical Support  
Branch and Chief Science Officer

Or

Haidy Tadros

Director General of the Directorate of  
Environmental and Radiation Protection  
and Assessment