



CMD 19-M29.1

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**Written submission from
Benoit Robert Poulet**

**Mémoire de
Benoit Robert Poulet**

**Regulatory Oversight Report on the
Use of Nuclear Substances in
Canada: 2018**

**Rapport de surveillance
réglementaire sur l'utilisation
des substances nucléaires au
Canada : 2018**

Commission Meeting

Réunion de la Commission

November 7, 2019

Le 7 novembre 2019

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September 19, 2019

Participant Funding Program Administrator

Canadian Nuclear Safety Commission

P.O. Box 1046, Station B

280 Slater Street

Ottawa, ON

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Subject: Review of CMD 19-M29 - Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2018 (e-Doc 5985236).

The Recipient agreed to participate in the CNSC public meeting scheduled for November 6, 2019 by completing the following tasks:

1. Review the Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2018 and comment on the report from the perspective gained from the recipient's professional experience and expertise.
2. Summarize the findings and recommendations in a written report to be submitted to the Commission by no later than October 7, 2019.

The Recipient has completed these tasks and documented the findings, comments, questions, and recommendations for consideration by the Commission in this report. Some of these items, for consideration by the Commission, are general in nature while others are specific to sections or topics covered by the Regulatory Oversight Report (ROR) prepared by CNSC staff. All specific items are linked back to a specific ROR page and/or section number (e-Doc 5985236) to provide the context and facilitate understanding of the item.

The Recipient general comments are as follows:

1. The DNSR ROR is a comprehensive, balanced, and well written report. The detailed information presented in Appendices 'A' through 'H' is clear and relates well to the main text of the report. Only a few minor discrepancies and inaccuracies were identified during the review and these are documented later in this report.
2. All of the events reported to the CNSC and presented in the ROR were rated by CNSC staff using the IAEA INES system. Use of the INES system for communicating the safety

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significance of nuclear and radiological events to the public is a good practice even when the event report itself is not submitted to the IAEA INES system. The ROR further clarifies that INES is not a tool for comparing the safety performances among facilities or organizations, but rather intended to effectively communicate the safety significance of events. This latter clarification statement is very important and should be maintained in future RORs. The ROR should also state the INES ratings being presented are those of the CNSC staff and not those of the IAEA or any other external organization to improve clarity.

Item for consideration by the Commission:

Consideration should be given to including a statement in future RORs to clarify the INES ratings provided in the ROR are strictly those of CNSC staff.

3. As in previous years, the ROR concludes “that the use of nuclear substances and prescribed equipment in Canada is safe”. The supporting information provided in that section of the ROR is almost entirely based on the conduct of the compliance verification activities conducted by CNSC staff during 2018.

Information regarding the licensing of organizations, the designating of RSOs, and the Certifying EDOs is not covered in detail nor presented in support of the CNSC staff conclusion. Information on the CNSC licensing process is provided in section 3.2 (pages 12 and 13) but it is general in nature and not sufficiently detailed to convince the reader that sufficient rigour is being applied to the licensing of organizations, the designating RSOs, and the Certifying EDOs. Some of the specific review comments documented later in this report pertain to this area; however, they cannot be conclusive on their own due to the lack of detail provided on these subjects in the ROR.

A review of the CNSC compliance verification information and the event report summaries provided in the ROR does allow the reader to question the rigour being applied to the licensing of organizations, designation of RSOs, and certification of EDOs. In all instances, the weaknesses identified through either the conduct of CNSC staff compliance verification activities or the occurrence of events are directly caused by weaknesses in licensee programs or inappropriate licensee behaviour who already hold licenses, designations, or certifications approved by the CNSC.

It is not unreasonable to surmise that many of these weaknesses or workplace conduct issues were already present at the time of licensing but were not detected, nor corrected, until later when a compliance inspection was conducted or an unfortunate event occurred. Conducting a compliance verification activity on an annual or longer basis should be sufficient to ensure

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continued nuclear safety provided the licensee programs were confirmed to meet all requirements of the applicable 14 CNSC Safety Control Areas before any licence was granted.

The ROR does provide information on some of the CNSC staff initiatives which will likely help improve the licensee safety performance. These include the production of Regulatory Documents and Guides as well as outreach activities targeted to specific licensee groups. These types of activities do contribute in maintaining or improving nuclear safety; however, they cannot be fully effective on their own and they do not obviate the need for a rigorous licensing framework because only licensees focused on nuclear safety are interested in reviewing these documents or participating in the outreach activities being offered.

Item for consideration by the Commission:

The implementation of a more rigorous regulatory framework for the licensing of organizations, the designation of RSOs, and the certification of EDOs, should be considered as a means of improving the safety performance of CNSC licensees and minimize the number of events resulting from weaknesses in the licensee management programs or workplace conduct issues. Any CNSC improvement initiatives undertaken in this area should be presented in future RORs.

The Recipient specific comments, questions, and recommendations are as follows:

1 – Limiting the scope of the ROR to selected Safety and Control Areas (SCAs).

CMD19-M29 Sections:

- Executive Summary (page 1)
- 2.2.2 – Inspection Performance (pages 6 and 7)

Review comment:

Page 1 of the ROR states “CNSC staff use a well-established Safety and Control Area Framework in evaluating each licensee’s safety performance. The framework includes 14 safety and control areas (SCAs) covering all technical areas of regulatory oversight. For the purpose of this report, CNSC staff evaluate safety performance by presenting licensees’ regulatory compliance in select SCAs (that is, management system, operating performance, radiation protection and security), as well as effective doses to workers and reported events”.

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Pages 6 and 7 of the ROR provide the rationale for basing the ROR on the four selected SCAs. Although the rationale is clearly explained, limiting the ROR report to these 4 SCAs leaves out information which could be of interest to the reader. For example, information on the status of the licensee training programs and on the results of CNSC compliance verification inspections activities conducted on these programs would be of interest to the reader since only the larger and more complex licensees would typically have such programs. The information from the SCAs which are currently not covered could vary from year to year based on the nature and significance of the licensing and compliance activities conducted during the year. Presentation of this information could be done so the reader understands it only applies to a limited number of licensees, a description of which could be included in the ROR to facilitate understanding.

Item for consideration by the Commission:

Including relevant program, licensing, and compliance verification information on SCAs which are currently not covered in the ROR should be considered in future RORs.

2 –Pre-Licensing site visits.

CMD19-M29 Section:

- Section 3.2 – Licensing (page 12).

Review comment:

The ROR states: “For all new applications associated with industrial radiography or well logging sealed sources, considered high-risk activities, CNSC staff will conduct a pre-licensing visit for the purpose of assessing the primary facility and the applicant’s readiness to commence licensed activities. CNSC staff may also conduct a pre-licensing visit for other uses of nuclear substances and prescribed equipment at the CNSC’s discretion. During these visits, CNSC staff interview the applicant and proposed radiation safety officer to assess their knowledge of the regulatory requirements, their own radiation safety program and their responsibilities”.

The ROR does not provide information on the scope of the questions that would be posed during the pre-licensing visit nor whether the interview results are documented and kept.

Items for consideration by the Commission:

Question #1 for CNSC staff:

Are the pre-licensing interview questions, answers, and assessments standard and fully documented?

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Question #2 for CNSC staff:

Are the pre-licensing interview results documented and kept?

3 – 2018 Annual Effective Doses for Nuclear Energy Workers (NEWs).

CMD19-M29 Sections:

- Section 6 - Safety Performance - Figures 10 and 11 (pages 27 and 28)
- Appendix B - Figures 25, 26, and 28 (pages 50, 51, and 53)

Review comment:

Figure 10 shows a total of 10 NEWs which have received effective doses >50mSv in 2018.

The 2018 data in Figure 11 appears to not match the data in Figure 10 for the same year. Also, there are no units (mSv) provided in Figure 11.

The data in Figure 10 also does not appear to match the data in Figures 25, 26, and 28 of Appendix B.

Items for consideration by the Commission:

Question #1 for CNSC staff:

Could CNSC staff confirm the data in Figures 10, 11, 25, 26, and 28?

Question #2 for CNSC staff:

The current 5 year dosimetry period will end on December 31, 2020. Did any of the Canadian NEWs exceed the 5 year effective dose limit of 100mSv in 2018?

Question #3 for CNSC staff:

What happens to the workers once they have exceeded these effective dose limits (>50 mSv for one year or >100mSv for a 5 year period)? Are they the subject of a special follow-up w.r.t. health or employment activity?

4 – CNSC Staff Conclusion on the Use of Nuclear Substances and Prescribed Equipment in Canada for 2018.

CMD19-M29 Sections:

- Executive Summary (pages 1 and 2)
- Section 6.2.2 – Operating Performance (page 31)
- Section 6.2.3 – Radiation Protection (page 33)
- Section 9 – Overall Conclusions (page 48)

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Review comment:

As stated above, the CNSC staff conclusion on the safety performance of the CNSC licensees is mostly based on the results of the compliance verification activities conducted by CNSC staff. The compliance verification data presented in the ROR is very relevant; however, it may lead the reader to a different conclusion than that of CNSC staff as the numbers clearly do not provide the same assurance.

Within the Operating Performance and Radiation Protection SCAs, CNSC staff concluded that 84% of the licensees and programs inspected (there were 949 inspections in 2018) met or exceeded CNSC requirements. Extrapolating this percentage to all of the 1520 Canadian Licensees in this sector, the reader can infer that approximately 240 Canadian Licensees do not have appropriate programs in place today to ensure safety is maintained in these two key SCAs.

Section 6.2.2 of the ROR states “In 2018, only 68% of fixed gauge licensees received ratings of fully satisfactory or satisfactory for operating performance. The most common items of non-compliance for fixed gauge licensees in this SCA were failure of workers to meet their obligations, failure of workers to follow licensee procedures, and failure to meet the requirement for vessel or hopper entry”. This set of data shows that almost one third (32%) of the inspected fixed gauge sector licensees did not meet CNSC requirements in the operating performance SCA.

Section 6.2.3 of the ROR states “The performance of licensees in the nuclear medicine subsector continued to decline...” and “In 2018, 74% of nuclear medicine licensees received ratings of fully satisfactory or satisfactory”. This set of data shows that approximately one quarter (26%) of the inspected nuclear medicine subsector licensees did not meet CNSC requirements in the Radiation Protection SCA.

The enforcement and event data presented in Appendices D and E illustrate well how some of the CNSC licensees do not meet the CNSC requirements which are intended to ensure safety.

The level of licensee non-compliance identified through the conduct of the CNSC staff inspections, the nature of the CNSC enforcement actions, and licensee event report information do not fully provide assurance the Canadian nuclear workers and members of the public are adequately protected and will continue to be protected over time.

Items for consideration by the Commission:

Presentation of the compliance verification data in the ROR is both relevant to this sector of the nuclear industry and helpful to the reader. The practice should be maintained in future RORs.

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In cases, where the compliance verification data being provided shows potential gaps in the safety performance of the licensees, the ROR should include an explanation of the safety significance of the data, a description of any additional measures being taken by the licensee(s) to ensure safety, and a description of any regulatory follow-up being taken.