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**Written submission from the
Canadian Environmental
Law Association**

**Mémoire de
l'Association canadienne du droit
de l'environnement**

In the Matter of

À l'égard de

**Regulatory Oversight Report for Uranium
and Nuclear Substance Processing Facilities
in Canada: 2017**

**Rapport de surveillance réglementaire des
installations de traitement de l'uranium et des
substances nucléaires au Canada : 2017**

Commission Meeting

Réunion de la Commission

December 13, 2018

Le 13 décembre 2018



Canadian
Environmental Law
Association
EQUITY. JUSTICE. HEALTH.

CELA's Comments on the CNSC's Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2017

*Recommendations to Improve the Oversight
of Environmental Protection and Waste
Management*

November 19, 2018

Submitted by:

Theresa McClenaghan, Executive Director and Counsel
Kerrie Blaise and Morten Siersbaek, Counsel

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Canadian Environmental Law Association

T 416 960-2284 • F 416 960-9392 • 55 University Avenue, Suite 1500 Toronto, Ontario, M5J 2H7 • cela.ca

SUMMARY OF RECOMMENDATIONS

Recommendation No. 1 Findings in the ROR should be supported by contextual information, to explain upon what basis the conclusion was reached.

Recommendation No. 2 For ease of cross-referencing the ROR with the licensee's allowable emissions levels, CELA recommends the frequency of emission reporting and reportable units used in the ROR reflect those used in the licence.

Recommendation No. 3 The Commission should undertake a review of licence discharge thresholds, considering effects on human health and aquatic organisms should the maximum allowable limit be released.

Recommendation No. 4 Frequently, emissions are many orders of magnitude less than licence limits. We recommend the Commission lower allowable licence limits, in keeping with the ALARA principle, and to ensure that fluctuations within emission releases are more detectable.

Recommendation No. 5: CELA recommends the CNSC seek to standardize the units and frequency of measurements among regulated facilities, to assist in discerning trends among licensees. At a minimum, the data presented in the ROR should reflect the units and frequency of measurement required in the licence, to facilitate comparison between actual emissions and allowable emissions.

Recommendation No. 6 CELA reiterates the importance of providing information on how action levels are chosen/set, and recommends that information be included which explains (1) the process of setting action levels, and (2) how the related goal of detecting program deficiencies is considered when action levels are set.

Recommendation No. 7 The CNSC should aim to for greater consistency among licensees' IEMP reporting to facilitate the identification of trends among facilities and over time. Furthermore, the ROR would benefit from contextual analysis of IEMP data and relevant key findings synthesized within the Environmental Protection SCA.

Recommendation No. 8 The CNSC should detail how it ensures compliance with the licensees' Environmental Protection SCA when annual inspections do not include this SCA in its review.

Recommendation No. 9 Waste Management should be a mandatory component of RORs, to further the mandate of the Commission per s. 9 of the *NCSA* to ensure the protection of the environment. The lack of any Waste Management chapter, coupled with the lack of public disclosure of pertinent documents, hampers any effort to review the CNSC's oversight of radioactive waste disposal at the facilities.

Recommendation No. 10 CELA recommends the inclusion of a Waste Management chapter, in order to review the capacity of onsite facilities to safely store and monitor waste, in light of the delays in review of offsite radioactive waste disposal facilities, and limitations or challenges licensees might face in light of the lack of offsite disposal options.

Recommendation No. 11 Given Canada's announcement of an asbestos ban, which goes into effect on December 30, 2018, it would have been timely for the ROR to discuss measures taken by nuclear facilities to (1) phase out asbestos use in nuclear facilities by December 31, 2022 and (2) pursue technically and economically feasible asbestos-free alternatives. We recommend an update be provided on this item at the upcoming ROR meeting.

Recommendation No. 12 In response to the commitment made at last year's ROR on nuclear substance processing facilities, we request the CNSC provide an update on the inclusion of radionuclide release in its reports.

Recommendation No. 13 Given the threat radionuclides pose to human health and the environment, we respectfully reiterate our recommendation that CNSC support the inclusion of radionuclides in the NPRI's substance list and advance the public's right to know. The lack of comprehensive, accessible publicly-available data minimizes the ability of the public and independent scientific experts to provide valuable insight on relevant considerations to support the decision-making process.

Recommendation No. 14: The ROR should serve as an opportunity to review licensing requirements with proponents and ensure documents which are to be publicly available per REGDOC 3.2.1 are indeed in place. Furthermore, the ROR should flag ERAs which may have changed from the year prior or, as in this instance of non-compliance with REGDOC 3.2.1, ensure the ROR meeting reviews actions taken to remedy non-compliance.

Recommendation No. 15 We recommend the CNSC require the disclosure of licensee's Environmental Protection Programs, Waste Management and Preliminary Disclosure Plans. Ensuring the public availability of the raw data and documents which informed the CNSC's rankings is crucial to gaining the public's trust. Furthermore, as a quasi-judicial tribunal, any documents which are before the Commission should be equally available and accessible to the public.

Recommendation No. 16 CELA requests the CNSC confirm the existence of Environmental Protection Programs, Waste Management and Preliminary Disclosure Plans for each facility reviewed in this report, to ensure each licensee has the requisite licence compliance plans in place.

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Introduction

These submissions are filed in response to the Canadian Nuclear Safety Commission's ("CNSC") revised notice of meeting dated June 29, 2018 concerning the presentation of the *Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2017* (herein "ROR").¹ A meeting in Ottawa with respect to this matter is scheduled for December 12-13, 2018.

CELA is a non-profit, public interest law organization. For nearly 50 years, CELA has used legal tools to advance the public interest, through advocacy and law reform, in order to increase environmental protection and safeguard communities across Canada. CELA is funded by Legal Aid Ontario as a specialty legal clinic, to provide equitable access to justice to those otherwise unable to afford representation.

In this report, Chapters 1 and 2 set out our general comments with regards to the SCAs of Environmental Protection and Waste Management, and Chapters 4 and 5 provide licensee specific data. In response to this year's ROR, CELA has undertaken the following review:

1. **Environmental Protection and Waste Management Safety Control Areas** - In 2017, CELA provided a joint submission with Northwatch in its review of the 2016 ROR on *Uranium and Nuclear Processing Facilities*. This year's submission builds on the feedback received by the Commission and CNSC Staff; and, evaluates the review of the Environmental Protection and Waste Management SCAs in the 2017 ROR.
2. **Tracking Improvement** - Using last year's submission as a baseline, CELA has reviewed the comments made by the Commission and CNSC staff to identify areas for reform and follow-up.
3. **Public Availability of Data** - CELA has tracked the public availability of the data relied upon in the ROR.

1. Environmental Protection - General Comments

i. Limited Basis for Assessing Licensee Compliance

Throughout the ROR, the CNSC makes conclusive statements about licensees' compliance with licence conditions and compliance requirements (ie. with CSA standards or Environmental Risk Assessments). However, as CELA has previously commented upon in its review of RORs,² there is a lack of data and

¹ CNSC, "Notice of Participation at a Commission Meeting and Participant Funding" (29 June 2018), online: <https://www.nuclearsafety.gc.ca/eng/the-commission/pdf/NoticeMeetingPFP-ROR-2017-UPNPF-e.pdf>; CNSC, "Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2017" CMD 18 – M47 (5 October 2018) [ROR]

² Northwatch and Canadian Environmental Law Association, "Review of the CNSC's Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2016" (20 Nov 2017), online: <http://www.cela.ca/ReviewOfCNSCregulatoryOversiteReport> [ROR 2016]

other contextual information accompanying these statements which explains on what basis these conclusions are reached.

CELA also finds that there is a great degree of variation in the amount of data provided. In some instances, actual data and limits are provided. In other instances, no data is provided, and instead general statements are made regarding the degree of compliance. CELA **recommends** that, where conclusions are made on the basis of data, key examples of such data (and associated limits) be included in the ROR. This could be done by including, for example, the highest level of the emission found in air, water, soil or gamma radiation tests.

As noted at last year's ROR meeting, the inclusion of maximum values (in addition to averages) received general support from the Commission who noted to CNSC Staff, "I understand that ... you have accepted that in the future or in the next year ROR you are going to report the two values, the maximum and the average."³ Such results are included in some parts of this year's ROR, an example of which is found on page 34, where the maximum sampled uranium concentration in ground water is provided.

Using maximum results in all sections of the ROR would ensure greater consistency in how information is provided and reported in areas covered by the ROR. This would also assist in clarifying what is meant by statements to the effect of 'results are "*well below*" regulatory limits.' CELA submits that examples, which support general statements of compliance, would provide tangible benefits to the public as well as the Commission in understanding the basis for the conclusions made. In line with this general recommendation, CELA's review of each licensee (see Chapters 4 and 5), seeks to provide specific suggestions as to where results of select measurements could be included in the ROR.

To remedy the lack of the analysis accompanying the conclusions of the ROR, CELA additionally **recommends** that the CNSC use the ROR as an opportunity to synthesize data relevant to an SCA for the year in review. In the context of Environmental Protection, this could be comprised of the licensee's Environmental Risk Assessment, monitoring results and emissions data, inspection reports, and their Annual Compliance Report. Hyperlinks to each of these licence compliance and verification documents could be provided for ease of reference and as additional resources. Indeed, CELA **recommends** including hyperlinks wherever possible. If a document is publicly available, either on CNSC's website or on a licensee's own website, a link should be provided to this document to increase the transparency of the ROR and its potential use as a tool for public education.

Recommendation No. 1 Findings in the ROR should be supported by contextual information, to explain upon what basis the conclusion was reached.

Recommendation No. 2 For ease of cross-referencing the ROR with the licensee's allowable emissions levels, CELA recommends the frequency of emission reporting and reportable units used in the ROR reflect those used in the licence.

³ CNSC, "Transcript of Commission Meeting December 13, 2107", p 103, online: <http://nuclearsafety.gc.ca/eng/the-commission/pdf/Transcript-of-CommissionMeeting-December13,2017.pdf> [Transcript]

ii. Emissions Data

In this report, CELA repeatedly notes the unreasonably high emissions limits set in licences, compared to actual average releases. In response we request the Commission undertake a review of licence discharge thresholds, considering effects on human health and aquatic organisms should the maximum allowable limit be released. For instance, as waste water treatment plans are not equipped to treat radioactive substances, we recommend the CNSC review the capacity of both ecological and constructed systems (ie. waterbodies and treatment plants) to respond to maximum allowable releases.

Recommendation No. 3 The Commission should undertake a review of licence discharge thresholds, considering effects on human health and aquatic organisms should the maximum allowable limit be released.

Recommendation No. 4 Frequently, emissions are many orders of magnitude less than licence limits. We recommend the Commission lower allowable licence limits, in keeping with the ALARA principle, and to ensure that fluctuations within emission releases are more detectable.

iii. Consistency among Calculations

Each of the licensees' Environmental Protection chapters include tables which report their releases of radiological and hazardous emissions through air and liquid effluent. CELA notes the following concerns with this method of reporting: first, the monitoring results are reported as annual averages. This contrasts with the licensee release limits, which according to their licence or Licence Conditions Handbook (LCH), are commonly averaged on a weekly basis.

Secondly, relying on annual averages removes the data's outliers and does not illustrate the number of weeks during the year that a release limit was exceeded. We reiterate our request from last year that the ROR present all monitoring results in a format which mirrors the frequency of reporting and units contained in the licence.

Recommendation No. 5: CELA recommends the CNSC seek to standardize the units and frequency of measurements among regulated facilities, to assist in discerning trends among licensees. At a minimum, the data presented in the ROR should reflect the units and frequency of measurement required in the licence, to facilitate comparison between actual emissions and allowable emissions.

iv. Action Levels

The ROR's description of action levels provides that "action levels are licensee-specific and may change over time, depending on operational and radiological conditions."⁴ Other than this general description,

⁴ ROR, *supra* note 1, pgs 17, 85 and 87

which highlights the contextual and variable nature of action levels, the ROR does not clearly describe the mechanisms or methods used to establish these levels.

CELA **recommends** the ROR include a description of the mechanisms used when action levels are set. This would help make it clearer exactly how significant an action level exceedance is and would also serve as a check on the efficacy of action levels to provide early warning to ensure licence limits are not exceeded. Furthermore, the ROR states:

Action levels for radiological exposures are established as part of the licensees' radiation protection programs. Each licensee is responsible for identifying the parameters of its program that represent effective indicators of a potential loss of control of the program.⁵

It is not clear from this statement by whom these action levels are established. CELA therefore **recommends** including information detailing who is responsible for setting these action levels.

Additionally, the ROR states, "Action levels that are never exceeded may not be established low enough to detect program deficiencies."⁶ It is also stated, however, that "in 2017, there were no action level exceedances reported by nuclear substance processing licensees."⁷ Yet, in a statement made earlier in the ROR, it was pointed out that "in 2017, there were [only] two radiological action level exceedances across all uranium processing facility licensees."⁸ Read together, these comments suggest that current action levels may in some instances be set too high to achieve the stated goal of detecting all program deficiencies. CELA **recommends** including an explanation of this seeming conflict between the stated philosophy behind the setting of action levels and the lack of action level exceedances.

Recommendation No. 6 CELA reiterates the importance of providing information on how action levels are chosen/set, and recommends that information be included which explains (1) the process of setting action levels, and (2) how the related goal of detecting program deficiencies is considered when action levels are set.

v. Independent Environmental Monitoring Program

CELA observed irregularity among licensees' Independent Environmental Monitoring Program (IEMP) data and an overall lack of standardization regarding frequency of testing. For instance:

- BRR's IEMP's were carried out in 2013, 2014, 2017 and 2018, but did not mention of any future IEMP's
- BWXT in Peterborough, IEMP's were carried out in 2014 and 2018, with another IEMP scheduled for 2020

⁵ ROR, *supra* note 1, p 85

⁶ *Ibid*

⁷ *Ibid*

⁸ *Ibid*, p 14

- BWXT in Toronto, IEMP's were carried out in 2014, 2016 and 2018, with another IEMP scheduled for 2020
- PHCF and CFM IEMP's were carried out in 2014, 2015 and 2017, with another IEMP scheduled for 2020
- SRBT, IEMP's were carried out in 2013, 2014, 2015 and 2018, again with another IEMP scheduled for 2020
- Nordion, IEMP's were carried out in 2016 and 2018, with the another IEMP scheduled for 2020
- Best Thereatronics, there is no mention of any IEMP's being carried out

Due to the significant variation and irregularity in the way that CNSC conducts its independent environmental monitoring programs, CELA **recommends** including information in the ROR that explains why IEMPs are carried out in an irregularly, as well as the reason why no IEMP's appear to have been carried out at BTL.

Furthermore, references to CNSC's Independent Environmental Monitoring Program are found throughout the ROR, but little accompanying data is provided. CELA therefore **recommends** that, where references are made to the IEMP, relevant data and key findings from the IEMP be incorporated into the text of the ROR. This could be done by providing a brief summary of the key results of the IEMP, and that this should include references to any significant increases or decreases in levels that may have been detected when compared to previous IEMP's as well as possible explanations for such variations.

Recommendation No. 7 The CNSC should aim to for greater consistency among licensees' IEMP reporting to facilitate the identification of trends among facilities and over time. Furthermore, the ROR would benefit from contextual analysis of IEMP data and relevant key findings synthesized within the Environment Protection SCA.

vi. Focus of Inspections

CELA has noted that onsite inspections in a given year only sometimes include inspections aimed at confirming compliance with the Environmental Protection SCA. CELA **recommends** that information be included in the report for each licensee as to why the Environmental Protection SCA was not covered in a given year. The need for such information is particularly important as the environmental protection SCA is one of the three SCAs which the ROR is said to focus on as they include key metrics to demonstrate a licensee's performance. The lack of annual inspections aimed at the Environmental Protection SCA is thus somewhat contrary to its stated importance in ensuring overall licensee compliance.

Recommendation No. 8 The CNSC should detail how it ensures compliance with the licensees' Environmental Protection SCA when annual inspections do not include this SCA in its review.

2. Waste Management - General Comments

i. The Need for Comprehensive Review

The licences reviewed for ROR all included a similarly worded provision that the “licensee shall implement and maintain a waste management program” and “a preliminary decommissioning plan.”⁹ For the reasons highlighted below, CELA does not support the CNSC’s decision to not include the SCA of Waste Management in this year’s ROR. CELA reiterates that it is a crucial oversight of the ROR to exclude Waste Management and as recommended in last year’s ROR, it should be profiled in the ROR.

First, as stated by the CNSC, the waste management SCA spans the operator’s internal waste-related programs, plans for decommissioning, waste characterization, waste minimization, and management practices.¹⁰ CELA submits due to the breadth of activities this SCA covers, it should not be excluded from review in the ROR. CELA therefore repeats the recommendation made during last year’s ROR to include the waste management SCR.

Secondly, CELA does not support the CNSC’s assertion that an ROR discussing three of fourteen SCAs “taken together...provides a meaningful overview of the safety performance of the facilities addressed in this report.”¹¹ Each SCA is distinct and linked to one of the compliance areas contained in a licensee’s licence. Per section 9 of the *Nuclear Safety and Control Act*, the Commission has a duty to “prevent unreasonable risk to the environment and to the health and safety of persons.” The *NCSA* identifies the protection of the environment as a distinct area of responsibility, separate from health and safety. In order for the Commission to respect this statutory duty, imposed by the *NCSA*, waste management cannot be conflated with other SCAs. Instead, the ROR should mirror the scope of the *NCSA*, and among other areas, include a chapter on waste management, as it’s a key element to ensuring unreasonable risk to the environment.

Third, all of the documentation which would have facilitated CELA’s independent review of licensee activity, such as Waste Management Plans and Preliminary Decommissioning Plans, are not publicly available. They were requested from all seven facilities and denied. While CELA not only recommends the Commission direct licensees to ensure the public availability of these documents (see Recommendations 14 and 15), the lack of any Waste Management chapter, coupled with the lack of public disclosure of pertinent documents hampers any effort to review the CNSC’s oversight of radioactive waste disposal. Isolating the public from this review is deeply concerning, as the CNSC continues to grant licences for continued operation (ie. Pickering NGS) and refurbishment (ie. Bruce NGS), but is otherwise silent on nuclear waste generation and monitoring within the facilities.

⁹ See Licence Condition 12.1 and 12.1

¹⁰ CNSC, “Safety and control areas,” online:

<http://nuclearsafety.gc.ca/eng/resources/publications/reports/powerindustry/safety-and-control-areas.cfm>; ROR, *supra* note 1, p 120

¹¹ *Ibid*, p 3

Recommendation No. 9 Waste Management should be a mandatory component of RORs, to further the mandate of the Commission per s. 9 of the *NSCA* to ensure the protection of the environment. The lack of any Waste Management chapter, coupled with the lack of public disclosure of pertinent documents, hampers any effort to review the CNSC's oversight of radioactive waste disposal at the facilities.

ii. Long-Term Waste Disposal

To gain some understanding of waste management practices at the facilities, CELA reviewed the licensees' Annual Compliance Reports (ACR). Frequently, licensees stated in their ACR that they were continuing to safely store and monitor waste on site, until appropriate disposal options were available.

Given the delays and lack of timelines plaguing each of the disposal facilities currently undergoing federal environmental assessment review, CELA recommends the inclusion of a Waste Management chapter is of particular importance, for the express reason of providing an opportunity to discuss waste inventory and legacy wastes, the capacity of onsite facilities to safely store and monitor existing inventory, and limitations and challenges licensees may face in light of the lack of offsite disposal options.

Recommendation No. 10 CELA recommends the inclusion of a Waste Management chapter, in order to review the capacity of onsite facilities to safely store and monitor waste, in light of the delays in review of offsite radioactive waste disposal facilities, and limitations or challenges licensees might face in light of the lack of offsite disposal options.

iii. Responding to Canada's Asbestos Ban

Throughout the licensees' Annual Compliance Reports, CELA noted references to asbestos. We therefore recommend the following:

Recommendation No. 11 Given Canada's announcement of an asbestos ban, which goes into effect on December 30, 2018, it would have been timely for the ROR to discuss measures taken by nuclear facilities to (1) phase out asbestos use in nuclear facilities by December 31, 2022 and (2) pursue technically and economically feasible asbestos-free alternatives. We recommend an update be provided on this item at the upcoming ROR meeting.

3. Public Information and Disclosure

i. Tracking Radionuclide Releases in Canada

Given the threat posed to human health and the environment, we respectfully reiterate our recommendation from last year's ROR that the CNSC support the inclusion of radionuclides in the NPRI's substance list and advance the public's right to know.

As CELA raised in its joint submission with Northwatch for the 2016 *Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities*,¹²

Radionuclides are not reported to Canada's National Pollutant Release Inventory (NPRI). The NPRI is an online data portal and a key resource for identifying pollution prevention priorities, supporting the assessment and risk management of chemicals, and encouraging actions aimed at reducing pollutant releases. The NPRI is covered under sections 46 – 53 of the *Canadian Environmental Protection Act, 1999*. The legislation enables the NPRI to track pollution using a listing approach and categorize substances by threshold. As radioactive substances are not part of the substance list, Northwatch recommends the CNSC support their inclusion in the NPRI's substance list, and advance the public's right to know.

In response, during the *Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities* meeting in December 2017, CNSC Staff committed:

For next year in the regulatory oversight reports, ... we are going to put what the equivalent would be on the National Pollutant Registry Index, which should be the total quantity released in a year for nuclear substances. That will be appended to the regulatory oversight report in next year's report.¹³

This action item remains outstanding. Furthermore, radionuclides continue to be exempt from the NPRI and stand-ins for this inclusion, such as Appendix K in another ROR by the CNSC, the *Regulatory Oversight Report for Uranium Mines, Mills, Historic and Decommissioned Sites in Canada: 2017*, are not equivalent.¹⁴ Presenting NRPI-like data as an appendix in an ROR, which is neither online, searchable nor part of a larger data repository that allows the public to view facility-wide or geographically specific pollutant releases, is not equivalent to reporting to the NPRI. Furthermore, since radionuclides are not reported to the NPRI, it is impossible to obtain an overview of the extent of releases of radionuclides, cumulatively.

¹² ROR 2016, *supra* note 2

¹³ Transcript, *supra* note 3, p 119

¹⁴ CNSC, "*Regulatory Oversight Report for Uranium Mines, Mills, Historic and Decommissioned Sites in Canada: 2017*," online: <http://nuclearsafety.gc.ca/eng/the-commission/meetings/cmd/pdf/CMD18/CMD18-M48.pdf> [Uranium Mines ROR]

For the reasons discussed below, we encourage the CNSC to demonstrate a willingness to facilitate open and public data, given repeated requests from intervenors during CNSC hearings and meetings. The lack of comprehensive, accessible publicly-available data minimizes the ability of the public and independent scientific experts to provide valuable insight on relevant considerations to support the decision-making process.

i. Releasing radionuclide data in an ROR is not equivalent to reporting under the NPRI

Radioactive substances are not among the substances which must be publicly reported and thus, CELA has on numerous occasions before the CNSC, recommended that the CNSC support their inclusion in the NPRI's substance list. Therefore, our recommendation from last year that radionuclides be reported to the NPRI, remains outstanding.

Canada continues to lack consistent comprehensive data on the releases of radionuclides from facilities around the Great Lakes Basin. Neither Canada's NPRI nor the U.S. Toxics Release Inventory (TRI) includes radionuclides as substances that polluters must report annually to the government and the public.

To this end, in March of 2016 CELA was also among the 110 advocacy groups that submitted an application under the binational *Great Lakes Water Quality Agreement* (GLWQA) to designate radionuclides as "Chemicals of Mutual Concern" (CMCs) under Annex 3 of that Agreement.¹⁵ As the *GLWQA* recognizes that knowledge and information about chemicals of mutual concern is fundamental to the management of chemicals in the Great Lakes basin, we recommended the designation of radionuclides as a CMC, due the existing lack of lack of consistent and comprehensive data on radionuclide releases.

The NPRI would assist in remediating this gap, not only because it is an existing online, data portal and a key resource for identifying pollution prevention priorities, but because it supports the assessment and risk management of chemicals, and encourages actions aimed at reducing pollutant releases.

ii. Reporting radionuclide data to the NPRI would further Goal 7 of the CNSC's strategic Planning Framework

The inclusion of radionuclides on the NPRI would support Goal 7 of the CNSC's Strategic Planning Framework, excerpted below:

Goal 7 of the CNSC's strategic Planning Framework is for the Commission to collect, generate and disseminate objective scientific technical and regulatory information using modern and accessible media.

¹⁵ See, CELA, "Radionuclides as Chemical of Mutual Concern in the Great Lakes Basin" (February 2016), online: <http://www.cela.ca/publications/radionuclides-chemical-mutual-concern-great-lakes-basin>

- 7.2 is to increase the amount of credible and understandable scientific information made available to the public.
- 7.2.1 – Identify measures to encourage staff to generate credible and understandable public information materials.
- 7.2.2 – Develop strategy to make licensee data, such as environmental releases etc., available through open source; determine what data should be made available; develop process to ensure information is contextualized.¹⁶

These goals could be simply accomplished by including radionuclide emissions and transfer data to the NPRI, as it is not only “modern and accessible” (per Goal 7), open sourced (per Goal 7.2.2) and a well-established online reporting portal, but a “one stop” online resource for viewing pollutant emissions.

iii. Reporting radionuclide data to the NPRI would further the public’s “right to know”

As summarized below, a public “right to know” increases transparency and accountability of decision-makers and can also serve as a motivator for action:

1. **Transparency** - By disclosing information on emission releases, governments, the public and other stakeholders can view types, quantities and the nature of emissions from facilities or industrial sectors.
2. **Accountability** - The transparency of decisions encourages and enhances accountability of decision-makers, serving as a check on government, industry and other entities by using transparency to achieve greater accountability. Increasing the accessibility of high-quality information raises public expectations of sound policy and practice in the fields of public health and environmental protection.
3. **Motivator for Action** - Information that reveals problems or lack of action motivates people to act and helps define public priorities. For example, a trend analysis of pollutant release data may reveal that while progress is being made in one industrial sector, another industrial sector is lagging and hence requiring more attention. Similarly, a community may not have been aware that a particular facility in the neighbourhood is storing, using or processing toxic substances in a manner or quantity that community considers imprudent. Hence, the availability of this information may assist to mobilize the community to respond to a change with respect to the environmental approvals for that facility.

Environmental reporting is a crucial feature of a public right to know and CELA recommends the CNSC recommend the inclusions of radionuclides on the NPRI, to directly further this goal.

¹⁶ CNSC, E-DOCS-5628339-v1-Presentation (11 Sept 2018)

Recommendation No. 12 In response to the commitment made at last year’s ROR on nuclear substance processing facilities, we request the CNSC provide an update on the inclusion of radionuclide release in its reports.

Recommendation No. 13 Given the threat radionuclides pose to human health and the environment, we respectfully reiterate our recommendation that CNSC support the inclusion of radionuclides in the NPRI’s substance list and advance the public’s right to know. The lack of comprehensive, accessible publicly-available data minimizes the ability of the public and independent scientific experts to provide valuable insight on relevant considerations to support the decision-making process.

ii. Compliance with RegDoc 2.3.1 - Environmental Risk Assessments

As stated in the ROR, REGDOC 3.2.1 *Public Information and Disclosure*,¹⁷ licensees are required to post their Environmental Risk Assessment to their website, if they are required to have one. With the exception of SRBT and Best Theratronics who do not presently require ERAs, CELA received the ERAs for the three Cameco facilities, BWXT and Nordion.

As a result of this document request, it came to our attention that these documents were not posted to their respective licensees’ websites and required redactions before they could be publicly shared. While Cameco has since posted their ERAs to their Media Library,¹⁸ CELA is concerned that other plans, required to be in place by the licensee, may be lacking. As all licensees denied disclosing their Environmental Protection Program and Waste Management Plans, we are similarly concerned that requirements – whether based on CNSC RegDocs or CSA Standards – may not be represented in these plans.

Recommendation No. 14: The ROR should serve as an opportunity to review licensing requirements with proponents and ensure documents which are to be publicly available per REGDOC 3.2.1 are indeed in place. Furthermore, the ROR should flag ERAs which may have changed from the year prior or, as in this instance of non-compliance with REGDOC 3.2.1, ensure the ROR meeting reviews actions taken to remedy non-compliance.

iii. Disclosure of Environmental Protection Programs and Waste Management Plans

As proposed in our funding application, CELA sought to “trace the public availability of the data which was relied upon to substantiate conclusions” made in the ROR. On 18 occasions, the ROR referenced the facilities’ “Environmental Protection Plan.” In the majority of instances, it was accompanied by the

¹⁷ *Per s. 2.2.4 Public information strategy and products of RegDoc 3.2.1:* The public information program shall provide open and transparent means and access for the public to obtain desired operational, environmental and safety information about the licensed facility or activities. As part of this program, if a licensee is required to conduct an environmental risk assessment (ERA) and/or a probabilistic safety assessment (PSA), the ERA and a summary of the PSA must be posted on the licensee’s website.

¹⁸ Cameco Fuel Services, “Media Library,” online: <https://www.camecofuel.com/library/media-library>

statement that the Program was “effective” or “satisfactory.” These findings fundamentally lack any independent corroboration, as only in 1 of 7 instances, was CELA provided the Environmental Protection Program of the licensee.

The following responses were received from licensees when CELA requested their Environmental Protection Plan:

- **Cameco:** Disclosure denied

“With respect to the programs requested, we consider those to be confidential and proprietary and will not be providing copies of them. Further, we have not disclosed publicly our PDPs because these similarly contain confidential and proprietary information.”¹⁹

- **BWXT:** Disclosure denied

“The documents you requested are confidential to BWXT Nuclear Energy Canada.”²⁰

- **Nordion:** Disclosure denied

Documents proprietary, not usual practice or requirement to disclose²¹

- **Best Theratronics:** no response to request

- **SRBT:** Prompt and full disclosure

We are dismayed by the general lack of willingness among licensees to disclose these plans which are required as conditions in their licence. We are even more concerned however, by the continued exclusion of public participants, generally, and civil society organizations from reviewing conclusions made by CNSC staff in the ROR that lack context and detail. The CNSC, as a regulator, is vested with acting in the public interest. Thus, ensuring the public availability of the raw data and documents which informed the CNSC’s rankings is crucial to gaining the public’s trust. Furthermore, as a quasi-judicial tribunal, any documents which are before the Commission should be equally available and accessible to the public.

As a result of our inability to review these plans, or their existence, we **request** that the CNSC verify that for each facility reviewed in this report, each licensee has the requisite compliance plans for their licence. It came to CELA’s attention after a conversation with Nordion that not only would they not disclose their Environmental Protection Program, it was very unclear what document, or series of documents this Program may be in reference too. SRBT was prompt in providing disclosure and was the only one to do so, among the licensees. Using their Environmental Protection Program as an example, the currency date was clearly visible and the studies which informed its program were also listed. Had

¹⁹ Email correspondence Cameco to CELA, “RE: Environmental Assessments: Kerrie Blaise - Document Request - Environmental Protection Program, Waste Management Plan and Preliminary Decommissioning Plans” (2 Nov 2018)

²⁰ Email correspondence, BWXT to CELA, “Document Request - Environmental and Waste Management Plans” (5 Nov 2018)

²¹ Phone conversation, Nordion to CELA (7 Nov 2018)

time allowed, these studies would have been requested and we would encourage the primary data to be available.

Recommendation No. 15 We recommend the CNSC require the disclosure of licensee’s Environmental Protection Programs, Waste Management and Preliminary Disclosure Plans. Ensuring the public availability of the raw data and documents which informed the CNSC’s rankings is crucial to gaining the public’s trust. Furthermore, as a quasi-judicial tribunal, any documents which are before the Commission should be equally available and accessible to the public.

Recommendation No. 16 CELA requests the CNSC confirm the existence of Environmental Protection Programs, Waste Management and Preliminary Disclosure Plans for each facility reviewed in this report, to ensure each licensee has the requisite licence compliance plans in place.

4. Uranium Processing Facilities

The uranium processing facility licenses reviewed in the ROR were those of Cameco’s Blind River Refinery (“BRR”), Cameco’s Port Hope Conversion Facility (“PHCF”) and Cameco Fuel Manufacturing Inc (“CFM”), and BWXT Nuclear Energy Canada Inc.’s facility. All of these licensees received a ‘satisfactory’ compliance rating in the areas of environmental protection and waste management.

i. Cameco: Blind River Refinery

Environmental Protection

Atmospheric Emissions

The ROR states that Cameco’s atmospheric emissions for the 2017 licensing year “continued to be effectively controlled”.²² Supporting this statement in the ROR is Table 3-2 *Blind River Refinery – Air Emissions Monitoring Results*, which reports the annual average of air emission monitoring results. CELA provides the following recommendations aimed at improving this section of the ROR.

First, in CELA’s joint submission with Northwatch for last year’s ROR, we recommended that it would be more effective if the air emission chart illustrated the number of times the licence limit was breached - rather than reporting an annual average which does not report variations within the data. Despite recommendations from CELA and Northwatch provided in our joint submission for last year’s ROR, air emissions are still displayed on an annual basis. An annual reporting chart also, does not align with the BRR licence which requires air releases to have a weekly, and sometimes daily, averaging periods. Because of this discrepancy in averaging period, the chart in the ROR does not track whether there were weeks when radiological release limits were exceeded.

²² ROR, *supra* note 1, p 32

CELA therefore **recommends** including information on the highest weekly or daily averages measured throughout 2017 in addition to the annual averages. Including such maximum values will help provide greater insight into variations throughout the year and make it clear how far from or close to the licence limits the emissions may be. Alternatively, CELA **recommends** including the action levels for air emissions, as well as information on any exceedances of the action levels in years where such exceedances may occur. CELA also **recommends** including information regarding the timeframe used when setting these action levels, namely whether action levels are based on hourly, daily or weekly measurements, or on some other timeframe.

Secondly, based on the historical data included in the ROR's Table 3-2, it is evident that the licensee, on an annual average basis, has not surpassed allowable emission limits. For instance, 0.00004kg/h of uranium was emitted via ventilation stack, despite a licence limit of 0.1 kg/h. Similarly, 0.00001 kg/h of uranium was emitted from the absorber stack, even though the licence limit was 0.1kg/h. Therefore, CELA **asks** if the CNSC has discussed amending the licence release limit so as to better reflect the CNSC's licensing principle of "As Low As Reasonably Achievable" (ALARA). CELA **requests** the CNSC's opinion on this issue and whether the licence release limit remains much higher to account for 'one off' or 'occasional' releases at a higher rate.

Environmental Management System

The ROR states that "Cameco holds an annual safety meeting during which environmental protection issues are discussed and documented."²³ The ROR continues that based on this meeting, CNSC staff review these documents and follow-up with Cameco staff on outstanding issues. First, CELA **requests** the CNSC confirm whether this annual safety meeting is public and if so, to provide updates when available, on location and date for the next meeting. Secondly, as the ROR does not provide further details on this event, CELA **requests** copies of the documents related to environmental protection that were reviewed at the most recent annual safety meeting.

Gamma Monitoring

The ROR at page 35, where gamma radiation levels are presented, some variation in detected levels is observed, from a monthly average of 0.24 $\mu\text{Sv/h}$ to 1.10 $\mu\text{Sv/h}$. It is not clear what has caused this variation in test results. CELA therefore **recommends** including a brief explanation for the variation in the levels detected, be it prevailing wind direction, distance from the source(s) to the fenceline or some other reason. It is, furthermore, not mentioned what the reference level is. CELA therefore **recommends** that the reference level be included to help provide context for the measurement results.

²³ ROR, *supra* note 1, p 33

CNSC Independent Environmental Monitoring Program

The ROR at page 35-36 notes that several IEMP's have been carried out in the Blind River area, including an IMEP carried out in October 2017, where sampling took place on MFN lands. CELA **recommends** including key results from the MFN sampling in the ROR.

Protection of the Public

The ROR discusses hazardous discharges to the environment from the Blind River Facility and in this context states that “no significant risks [...] occurred”.²⁴ To make it clearer to the Commission as well as members of the public what is meant by “no significant risks [...] occurred”, CELA recommends that the section on *Protection of the Public* discuss one or several of such non-significant discharges. When considering which event or events to include, CELA **recommends** choosing those which could be considered the most significant (i.e. the least insignificant events), when looking at all the various events that occurred during 2017. This would provide a better understanding of how well within a margin of safety such discharges fall.

Environmental Risk Assessment

According to the ROR, Cameco will submit a new ERA for the BRR facility in 2021. The ROR notes that this iteration will “address several technical comments prior to or in the next iteration.” The ROR does not expand upon this statement and is otherwise silent on these suggested actions. CELA **requests** further details be provided which could distinguish the 2016 ERA from the update version, anticipated no later than 2021.

CELA further **recommends** that the ROR be used as an opportunity to discuss improvements to subsequent ERAs. For instance, the current ERA notes that “measured data are absent for certain radionuclides in certain environmental media,” however, had there been this data, it would be preferential to modelling.²⁵ Additionally, many of the studies relied upon in the ERA predate the report, such as the assessment on flooding potential, dating to 2009. CELA **requests** to what degree these baseline studies will be reviewed and updated to inform the 2021 ERA. As the present ERA notes that the 2009 flood assessment reviewed the potential hazards of storm surges and waves, CELA **requests** that the ROR comment upon the frequency with which these studies are updated and if new reports are completed, note them in the ROR. Given the rate at which the climate impacts are occurring, we specifically **recommend** the ERA expressly consider climate impacts and variability.

²⁴ ROR, *supra* note 1, p 36

²⁵ Cameco Blind River Refinery, “Environmental Risk Assessment,” (Nov 2016), p 2 -34, online: <https://www.camecofuel.com/library/media-library>

Waste Management

The BRR received a satisfactory rating on the waste management SCA. The ROR, however, does not include discussion of the Waste Management SCA and thus it is unclear upon what basis this conclusion was reached. As it remains outstanding, CELA resubmits its recommendation from last year's ROR that a chapter on waste management be included in the ROR, reporting the extent to which the uranium contaminated materials generated on site have been reprocessed, recycled and re-used or otherwise stored or disposed of on or off site, and indicate the amounts retained on-site and their respective storage condition.

The chapter reviewing Waste Management in the BRR's Annual Compliance Report provides only provides limited insights. In response to the statement in the Annual Compliance Report that "waste materials that cannot be reprocessed, recycled or re-used are safely stored on site until appropriate disposal options are available,"²⁶ we propose the following: given the delays and lack of timelines plaguing each of the disposal facilities currently undergoing federal environmental assessment review, CELA recommends a Waste Management chapter be included in the ROR, for the express reason of discussing legacy waste, the capacity of onsite facilities to safely store and monitor this inventory, and discuss limitations and challenges.

ii. Cameco: Port Hope Conversion Facility

Environmental Protection

Relevance of Overall Performance to Environmental Protection

CELA has noted that comments made in the "Overall Performance" section of the ROR are often absent in the SCA to which they are directly relevant. For instance, the ROR discusses a hydrogen fluoride release at the Port Hope Conversion Facility (PHCF) and states that this release did not have any environmental impacts.²⁷ The size of the release is, however, not described, nor how it was determined that there was no environmental impact. Oddly, the release is mentioned in section 4.1. *Overall Performance*, but not in section 4.3 *Environmental Protection*. CELA **recommends** including information about the release in section 4.3. *Environmental Protection*, including information regarding the size of the release and whether the determination of the lack of environmental impact was based on the size of the release or some other factors.

Additionally, five onsite inspections are mentioned in the ROR,²⁸ yet none of these focused on the Environmental Protection SCA. As stated above in Chapter 1(vi), CELA **recommends** that information be

²⁶ Cameco, "Annual Compliance Report – Blind River Refinery," (27 March 2018), p 66, online: <https://www.camecofuel.com/uploads/downloads/BRR-2017-annual-compliance-report.pdf>

²⁷ ROR, *supra* note 1, p 41

²⁸ *Ibid*

included in the report for each licensee as to why the environmental protection SCA was not covered in a given year.

Atmospheric Emissions

In reference to the Port Hope Conversion Facility's (PHCF) atmospheric emissions, the ROR notes that these "continued to be effectively controlled."²⁹ CELA has a number of comments regarding this section. First, CELA again **recommends** that air emissions monitoring results included in the air emissions monitoring results section of the ROR use the same averaging period as that referenced in the licensee's LCH. The ROR's Table 4-3 *Air emissions monitoring results* reports air emissions on an annual average while the LCH requires limits be averaged over a 24-hour period.

The ROR provides the licensee's average annual release of uranium from the UF₆ plant was 0.0011 kg/h, which is significantly below the licence limit of 0.280 kg/h. Similarly, the average annual emission of uranium from the UO₂ plant of 0.0005 kg/h reported in the ROR was also significantly lower than the allowable licence limit of 0.240 kg/h. The releases reported thus demonstrate that the licensee is capable of keeping its emissions far lower than the licence limits. CELA therefore **requests** the CNSC to clarify the reason for keeping licence limits many orders of magnitude higher when the CNSC supports the ALARA licensing principle.

CNSC Independent Environmental Monitoring Program

The IEMP that has been carried out for PHCF is briefly mentioned on page 51. Again, as suggested in Chapter 1(v), CELA **recommends** including more information on the results of the IEMP.

Reportable Events and Inspections

Section 4.3 of the ROR reviews PHCF's environmental protection performance. According to Table K-2 *Inspections, PHCF, 2017*, unlike in 2016, no inspections were performed regarding the environmental protection SCA. CELA **recommends** including information in the ROR that explains why no inspection was carried out in 2017, as well as general information regarding the planning of inspections. CELA proposes to include this information to provide the public with a better understanding of the rationale behind the frequency of environmental protection-inspections as well as other inspections, and to make it easier to determine if the frequency of such inspections is sufficient to protect the environment.

Waste Management

Cameco's Port Hope Conversion Facility received a satisfactory rating on the SCA of waste management. Again, lacking a designated chapter which discusses this SCA, CELA has referred to the proponent's Annual Compliance Report and Environmental Risk Assessment for the basis of these comments.

²⁹ *Ibid*, p 47.

As the ROR lacks a chapter on waste management, CELA has relied upon the PHCF annual compliance report and environmental risk assessment.

Asbestos Ban

Respecting Cameco's "Vision in Motion" plan to clean up and renew the PHCH, the annual compliance report notes:

In 2017 key activities included the initiation of detailed design; repackaging of stored wastes in preparation for transferring them to the LTWMF (executed using PHCF site resources during the Super CUP campaign); as well as asbestos abatement and electrical upgrades in the former UF6 plant to prepare it for future equipment removal and demolition activities [emphasis added].³⁰

Given Canada's announcement of an asbestos ban, which goes into effect on December 30, 2018, it would have been timely for the ROR to discuss measures taken by nuclear facilities to (1) phase out asbestos use in nuclear facilities by December 31, 2022 and (2) pursue technically and economically feasible asbestos-free alternatives.³¹ We **request** an update be provided on this item at the upcoming ROR meeting.

Program Improvements

The Annual Compliance Report notes that in 2017:

Waste management projects were deployed, as part of the long-term waste management plan, to dispose of contaminated materials at appropriately licensed hazardous waste facilities.³²

Similar statements are provided in the ROR,³³ however, no further details are provided. Relatedly, the Annual Compliance Report notes that in 2018, actions will continue to implement portion of the long-term waste management plan. CELA **requests** the CNSC seek an update on the nature of these deployments in 2017 and intended activities in 2018, and how they fit into the long-term waste management plan.

³⁰ ROR, *supra* note 1, p 9

³¹ See Canada, "Prohibition of Asbestos and Products Containing Asbestos Regulations: Frequently Asked Questions," online: <https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/prohibition-asbestos-products-regulations-questions.html>

³² Cameco, "Annual Compliance Report – Port Hope Conversion Facility," (29 March 2018), p 62, online: <https://www.camecofuel.com/business/port-hope-conversion-facility>

³³ ROR, *supra* note 1, p 41

iii. Cameco Fuel Manufacturing Inc.

Overall Performance

The ROR mentions that in 2017, Cameco submitted an updated Preliminary Decommissioning Plan with a cost estimate of \$21 million.³⁴ CELA requested a copy of the Decommissioning Plan, but this request was denied because it contained proprietary information. It is therefore unclear what this cost estimate covers. CELA reiterates that where the ROR comments on primary documents, which are not publicly available and which have not been provided to CELA to review, the ROR should provide sufficient information from such documents to fill in the gaps and details. In the present context, CELA **recommends** that the ROR provide a basic explanation of this cost estimate, including why this estimate was raised from \$ 19.5 million to \$ 21 million. In particular, CELA **recommends** including information regarding the costs associated with remediating the site.

The ROR also mentions a fire, which occurred around the weld prep machines due to zirconium buildup.³⁵ CELA **recommends** including information on whether this fire led to any releases to the environment, and if so, information on the extent of any such release.

Environmental Protection

Atmospheric Emissions

Table 5-2 of the ROR states that building exhaust ventilation emissions “remained consistently well below their licence limits.” This trend, tracked from 2013 to 2017 demonstrates that despite a licence limit of 14 kg/year, the facility only produced a maximum of 0.57 kg/year. CELA **requests** the CNSC explain why the release limit remains significantly higher in the licence, despite drastically lower reported emissions since 2012. A limit of 14 kg/year appear contrary to ALARA.

While atmospheric emissions are only one component of a licensee’s environmental protection program, we **ask** the CNSC to provide a benchmark which would best support the licensee’s pursuit of a “fully satisfactory” or FS rating. CELA also **recommends** that in addition to reporting on existing environmental protection programs, the CNSC should use the ROR as an opportunity to provide brief guidance to licensees on areas in which improvement can be made in order to reach – what should be – the required benchmark of FS.

³⁴ *Ibid*, p 55

³⁵ ROR, *supra* note 1, p 55

Uranium in Ambient Air

The ROR states that the annual average concentrations from the air samplers located in four locations around the facility, demonstrate that uranium in ambient air level remained “well below” the Ministry of Environment and Climate Change’s standard.³⁶ CELA **requests** that the CNSC consider presenting data, such as this, in an alternative format for next year’s ROR. As CELA provided in last year’s ROR submission, averaging emissions on an annual basis does not demonstrate the variability of releases across or within the four sampling sites. Furthermore, it is impossible to analyse data trends, if it is not reported on weekly or monthly timescales. Being able to compare the releases for the four sites would provide an additional analysis opportunity.

Groundwater Monitoring

The ROR at page 62, notes exceedances in groundwater - due to the past storage of contaminated material. CELA **recommends** including more information on the degree of remediation carried out to date. If contamination of the overburden has not yet been fully addressed, CELA furthermore **recommends** including information on any plans regarding the remediation and/or removal of any remaining sources of the elevated uranium levels found in groundwater samples.

Surface Water Monitoring

CELA seeks further detail from the CNSC on issues raised in its review of CFM’s surface water monitoring. For instance, the ROR mentions that “the highest uranium concentration was collected at SW-9” but, it was “below the applicable CCME guideline for short term exposure.”³⁷ CELA **recommends** that the ROR build on report incidences and explain *why* samples or monitoring sites exceed the norm, and what action was required to be taken to lessen the concentration.

CNSC Independent Environmental Monitoring Program

The IEMP that has been carried out for the Cameco Fuel Manufacturing facility is briefly mentioned at the bottom of page 63. Again, as suggested in Chapter 1(v), CELA **recommends** including more information on the results of the IEMP.

Inspections

According to Table K-3 *Inspections, CFM, 2017*, and unlike in 2016, no inspections were performed in 2017 in regards to the environmental protection SCA. CELA **recommends** including information in the ROR that explains why no inspection was carried out in 2017, as well as general information regarding the planning of inspections. CELA **proposes** to include this information to provide the public with a better

³⁶ *Ibid*, p 61.

³⁷ *ROR, supra* note 1, p 53

understanding of the rationale behind the frequency of environmental protection-inspections as well as other inspections, and to make it easier to determine if the frequency of such inspections is sufficient to protect the environment.

While a discussion of the inspection report and resulting compliance actions would be beneficial in the ROR, providing publicly accessible documents through hyperlinks would alternatively relieve much of this information gap while not substantially lengthening the ROR.

Waste Management

CFM received a satisfactory rating for the SCA of waste management. The ROR does not report any inspections having occurred in 2017 with regard to waste management. Because of the CNSC's lack of discussion of waste management (the word waste does not appear a single time in the parts of the ROR that cover CFM), the following comments are derived from our review of the proponent's Annual Compliance Report.³⁸

Facility Modification

The Annual Compliance Report notes:

[E]quipment and processes in the Waste Treatment area were improved and the general area was expanded in 2017. The final changes to the Waste Treatment area are planned to be completed in 2018. Once completed this is expected to improve occupational airborne exposures.³⁹

CELA **requests** details regarding these changes be discussed at the upcoming ROR meeting and included within a Waste Management SCA chapter in next year's report. We also **request** data which documents current occupational airborne exposures and plots their improvement, per facility modifications.

Waste Management

The Annual Compliance Report notes that "Waste materials that cannot be reprocessed, recycled or re-used are safely stored on site until appropriate disposal options are available." Per Recommendation No. 10, we **request** the CNSC review the impact of delays resulting from disposal facilities currently undergoing federal environmental assessment review, and the capacity of onsite facilities to safely store and monitor this inventory in the interim.

³⁸ Cameco, "Annual Compliance Report – Fuel Manufacturing" (30 March 2018), online: <https://www.camecofuel.com/uploads/downloads/CFM-2017-annual-compliance-report.pdf>

³⁹ *Ibid*, p 16

Pathway Documentation

As part of its improvement plan, the Annual Compliance Report also notes that it seeks to “update waste pathway documentation to support plan to remove legacy waste from site in 2019.” CELA **requests** that studies supporting this revised pathway documentation be made publicly available and given recommendations by intervenors at prior licensing hearings, the CNSC comment on how this feedback on emissions data will be incorporated into the legacy waste plan.⁴⁰

iv. BWXT Nuclear Energy Canada Inc

On page 66, Figure 6-1 includes a photo of the BWXT sign at what appears to be the front entrance to the BWXT Toronto Facility, rather than an aerial photo or map of the facility. CELA **recommends** that an aerial photo or a map of the Toronto facility as well as the Peterborough facility be included as has been done for the other facilities covered by the ROR. This would assist in providing a better understanding of the location of BWXT facilities in relation to surrounding communities.

Environmental Protection

BWXT Nuclear Energy Canada Inc (“BWXT”) produces nuclear fuel bundles which are used by Ontario Power Generation’s Pickering and Darlington nuclear power plants. This licensee received a satisfactory rating for environmental protection in the 2017 ROR.

Waste Water Discharge

The ROR, Table F-11 and F-16 states that in 2017, the annual sewer discharge of uranium from BWXT Peterborough was 0.00011 kg compared to an annual limit of 760kg, while the annual release from BWXT Toronto was 0.941 kg compared to an annual limit of 9,000kg.

First, CELA **requests** the CNSC to explain why the release limits are set phenomenally higher than the actual releases and if, based on current monitoring data, why it is necessary for these release limits to remain at these levels. Secondly, it is unclear from the ROR, as it is not discussed, if samples are taken post-water treatment. For instance, the waste water treatment plant at the Long-Term Waste Management Facility in Port Granby is equipped with the “best available technologies to treat the waste water” and improve the “quality of water being discharged into Lake Ontario.”⁴¹ As uranium releases to the sewer are included in licences and can be as much as 760,000 g/year, CELA **requests** the CNSC to comment on the capacity of the of the various waste water treatments that BWXT releases its water into, and their treatment standards relative to that of Port Granby.

⁴⁰ *Ibid*, p 96

⁴¹ Canadian Nuclear Laboratories, “Port Granby Waste Water Treatment Plant,” online: <http://www.phai.ca/en/home/port-granby-project/port-granby-project-waste-water-treatment-plant/default.aspx>

Furthermore, in order to better review the environmental effects of allowable uranium releases into the sewer system, CELA **requests** the CNSC to confirm whether they incorporate results from post-treatment radionuclide monitoring tests in their analysis. While CELA understands that the release limits for the BWXT are set for a period of four years spanning December 2016 to December 2020, we ask if the CNSC requires the proponent to annually review the capacity of waste treatment facilities to treat radiological and hazardous effluent emission. We also **recommend** the CNSC require the licensee to report uranium levels post-treatment in µg/L. In instances where there are multiple licensees discharging effluent to the same sewer system, we also **ask** the CNSC explain how it evaluates the capacity of the waste water facility to receive the cumulative load of uranium.

Environmental Management System

The ROR at page 75 states that BWXT holds an annual safety meeting, which discusses and documents environmental issues. CNSC then reviews the identified issues. From the description on page 75, it is unclear what issues have been identified, and CELA therefore **recommends** that summary information on these issues, or at least the key issue identified, be included on page 75 as well as the status of these issues.

In comparison to other facilities reviewed in the ROR, CELA furthermore notes that BRR holds annual safety meetings as well as monthly safety meetings for employees; that SRBT holds such meetings with no mention of how often this is done; that PHCF holds monthly safety meetings for its employees with no mention of annual safety meetings; and that CFM holds monthly meetings for employees with no mention of an annual safety meeting. CELA **recommends** including information that explains this degree of variation in safety meetings.

CNSC Independent Environmental Monitoring Program

On page 76, the IEMP's for the BWXT facilities are discussed. While no IEMP was carried out in 2017, an IEMP was carried out in 2018. CELA therefore **recommends** including a summary of the results of this IEMP in the next ROR for the year 2018.

Waste Management

CELA has reviewed BWXT's Annual Compliance Report for information pertinent to the Waste Management SCA, however, as details related to waste generation were provided under separate cover to the CNSC, CELA is unable to provide comments.

As the Annual Compliance Report is a public document, which licensees must post to the website (per RegDoc 3.2.1), we request that Appendixes to the Report also be publicly available. In this instance, they have not been disclosed due to proprietary value. CELA submits this undermines the intent of RegDoc 3.2.1 if data and details of management plans can be redacted and only high-level statements publicly

available. We request the CNSC ensure all licensees are meeting the objectives of RegDoc 3.2.1. as requirements of licensing.

5. NUCLEAR SUBSTANCE PROCESSING FACILITIES

The licensees in this category include SRB Technologies Inc (“SRBT”), Nordion and Best Theratronics Ltd (“BTL”). SRBT received a Satisfactory rating for the SCAs of environmental protection and waste management in 2017. Nordion maintained its Fully Satisfactory environmental protection rating for the 2017 licensing year and received a Satisfactory rating for waste management. BTL received a compliance rating of Satisfactory for its environmental protection and waste management SCAs.

i. SRB Technologies Inc

Environmental Protection

Tritium Emissions

SRB appears to have taken a step in 2017 that increased gaseous tritium emissions to the environment. According to SRB's 2017 Annual Compliance Report:

SRBT undertook a research and development plan to investigate an increase in the number of cycles a tritium trap base could be safely used during tritium processing operations. Previously, bases were limited to 13 cycles of filling and use on the processing rigs when filling light sources; however, with the application of a new type of valve design on the traps in 2016, it was hypothesized that the lower leakage rates would ultimately prolong the effective life of the depleted uranium adsorbent, without any significant safety issues or increase in emissions.

The formal research and testing plan was accepted and implemented under ECR-719, CNSC staff were notified of the controlled, provisional change to our operating limit for these components, and tritium bases began to be used beyond 13 cycles in early 2017. Data was collected, trended and assessed through the following months, culminating in the determination by the Mitigation Committee in October 2017 that using bases up to a maximum of 30 full cycles had no deleterious effect on safety or the environment.⁴²

However, as of September 18, 2018 (the most recent date for which emissions monitoring results were posted on the SRB website), cumulative tritium emissions to the air had already equaled total tritium emissions for 2017. Also, for the ten months' data for 2018 posted on tritium in groundwater monitoring well MW06-10 at the base of the stacks, the average tritium concentration was 39.564 Bq/L, higher than the 33,520 Bq/L cited in the ROR.

⁴² SRBT, “Annual Compliance and Performance Report” (29 March 2018), online: <http://www.srbt.com/ACR2017.pdf>

In light of this trend of increased tritium emissions, which contradicts the "hypothesis" that this change would not lead to an "increase in emissions", and the increase in groundwater tritium contamination in well MW06-10, CELA **recommends** CNSC staff direct SRB to return to the previous limit of 13 cycles for use of tritium traps.

With regard to the residential well with 113 B/L of tritium, CELA also notes that SRB's well monitoring table states that, as of 2018, the residence at which this well is located and three other residences on Boundary Road near the SRB facility "transitioned to the municipal water supply, and... their well has been disconnected."⁴³ CELA **requests** the CNSC clarify whether these well disconnections were prompted by the ongoing tritium contamination.

Groundwater Monitoring

The ROR reports higher than average tritium levels in two wells (including 33,520Bg/L in well MW06-10) near the SRBT building.⁴⁴ This greatly exceeds the Ontario Drinking water quality standard of 7000Bg/L. CELA **recommends** including information on the source of these elevated levels, e.g. ongoing contamination, a legacy source or both, any hydrogeological mapping of the area, as well as information on whether or not there is a need for mitigation of these levels. CELA furthermore **requests** information on whether any action levels have been set in light of this contamination. If this has occurred, then CELA **recommends** including this action level. If not, then CELA requests information on why no action level has been set for this particular type of contamination. Furthermore, to the extent that the Ontario drinking water standard is not deemed relevant here, CELA **requests** information on why that is the case as well as information on what standard should be applied instead. CELA also **recommends** including information on the maximum levels measured in the wells where these elevated average levels have been found.

The ROR also states that "tritium concentrations decrease significantly at locations further away from the SRBT."⁴⁵ As SRBT lacks an Environmental Risk Assessment, CELA **requests** the CNSC to comment upon the extent to which an independent hydrological analysis of the area has been conducted, in order to map and identify pathways for contamination.

Also, the ROR states the highest concentration of tritium, at 113 Bq/L, was found in a residential well. CELA **recommends** including an explanation in the ROR for this elevated tritium level. For instance, was it due to location relative to the facility? Was the well contaminated through a pathway (ie. wells, fractures)? And, has a study been conducted to review whether the well serves as a pathway to groundwater contamination?

⁴³ SRBT, "Groundwater tritium concentration summary report," online: <http://srbt.com/WELLS.pdf>

⁴⁴ ROR, *supra* note 1, p 100

⁴⁵ *Ibid*

The ROR also states that CNSC staff reviewed SRBT's Groundwater Monitoring Plan (GMP), its GMP procedures and Groundwater Protection Program documents and verified that they are aligned with CSA N288 7-15 *Groundwater protection programs at Class I nuclear facilities and uranium mines and mills*. CELA **seeks a response** from the CNSC which would clarify what these standards are and what improvements were made, in particular in light of the above-mentioned average levels in well MW06-10, which exceeded the and whether these changes were verified by the CNSC.

Other Monitoring

The ROR does not comment on levels of organically bound tritium (OBT), which persists in relatively high levels in soil, water and vegetation. OBT occurs in many forms (e.g., amino acids, DNA, fats, carbohydrates) and is the form of tritium that is most hazardous to humans.⁴⁶ Therefore, CELA **requests** the ROR provide specific information about OBT levels in soil, water and vegetation.

CNSC Independent Environmental Monitoring Program

The ROR discusses the IEMP for the SRBT facility is discussed.⁴⁷ While no IEMP was carried out in 2017, an IEMP was carried out in 2018 and CELA therefore **recommends** including a summary of the results of this IEMP in the next ROR for the year 2018.

Environmental Protection Standards

The ROR states that in 2016 SRBT submitted a gap analysis and action plan in line with CSA N288.6-12, *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills*, and that CNSC staff found the gap analysis acceptable.⁴⁸ As this document is not publicly accessible, CELA **recommends** that the CNSC to expand upon this analysis, the scope of the action plan and the gaps identified.

Environmental Management System

The ROR states the following, "SRBT made a commitment to complete a gap analysis of its environmental monitoring program and effluent monitoring program against REGDOC-2.9.1, *Environmental Protection Policies, Programs and Procedures* [20], CSA N288.4-10, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills* [10] and CSA N288.5-11, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills* [11], respectively. In addition, CNSC staff reviewed SRBT's effluent monitoring program against CSA N288.5-11, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills* [11]. SRBT submitted its gap analysis and received comments from CNSC staff based on their review. SRBT addressed CNSC

⁴⁶ Dr Ian Fairlie, "Tritium Hazard Report: Pollution and Radiation Risk from Canadian Nuclear Facilities" (June 2007)

⁴⁷ ROR, *supra* note 1, p 101

⁴⁸ *Ibid*, p 102

staff's comments and submitted revised documents in 2017. CNSC staff have since reviewed and accepted SRBT's submissions."⁴⁹

We urge the CNSC to provide a more detailed discussion of this licence and CSA standard alignment. The ROR's comment that CNSC staff reviewed and accepted SRBT's submissions does not provide a sufficient basis for our review, nor demonstrate how the CNSC came to this conclusion.

Compliance Inspection Reports

No inspections with regards to the environmental protection or waste management were carried out at SRBT in 2017. CELA **reiterates** that the ROR should discuss the method used when deciding whether or not such inspections will be carried out in a given year.

Ground Water and Soil Monitoring

The ROR provides an overview of SRBT's environmental monitoring. It notes that "there were no releases of hazardous substances to the environment from SRBT that would pose a risk to the public or environment" and that "the public continues to be protected from facility emissions."⁵⁰ In this context, CELA refers first and foremost to the finding of 33,520 Bq/L in groundwater at SRBT. Without further information regarding the source of this contamination or further mapping of this contamination CELA is reluctant to accept the conclusion that no releases from SRBT could pose a risk to the public or the environment.

Secondly, in order to prevent the contamination of source water, we seek clarification on what parameters are in place to ensure these wells do not serve as pathways for groundwater contamination.

Waste Management

CELA reviewed SRBT's Annual Compliance Report⁵¹ in tandem with its Waste Management Plan. The two documents were complimentary – with one assisting the interpretation of the other. To facilitate a public understanding the type of wastes onsite at facility, their export offsite and quantities, CELA recommends that the CNSC require all licensees to disclose their Waste Management Plan.

⁴⁹ ROR, *supra* note 99

⁵⁰ ROR, *supra* note 1, p 102

⁵¹ SRBT, "Annual Compliance Report," online: http://srbt.com/compliance_Reports.php

ii. Nordion

Environmental Protection

Environmental Monitoring Program

The ROR at page 112 notes that Nordion has submitted revised a gap analysis of its environmental program against CSA N288.4-10 *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills* and CSA N288.5-11 *Effluent monitoring programs a Class I nuclear facilities and uranium mines and mills*. The ROR further notes that CNSC staff have reviewed and accepted Nordion's revised gap analysis. CELA **recommends** that the CNSC expand upon this analysis, the scope of the action plan and the gaps identified and provide an update at the ROR meeting.

Soil monitoring

CELA welcomes the fact that Nordion now conducts soil sampling every year instead of every two years, in line with what is done, for instance, at Cameco's PHCF and Blind River Refinery, as this will assist in comparing licensees environmental protection and monitoring actions.

CNSC Independent Environmental Monitoring Program

The ROR at page 113 discusses the IEMP for the Nordion facility. While no IEMP was carried out in 2017, an IEMP was carried out in 2018 and CELA therefore **recommends** including a summary of the results of this IEMP in the next ROR for the year 2018.

Waste Management

Nordion's Annual Compliance Report⁵² comments on the movement of its waste (radioactive and non-radioactive) offsite. While CELA is able to view offsite transfers and accompanying emissions for the non-radioactive transfers on the NPRI, an equivalent is not available for radioactive materials. In order to document these transfers, we **request** the information provided in individual licensees' Annual Compliance Reports be reported to the NPRI.

iii. Best Theratronics Ltd

Overall Performance

The ROR notes at page 117 that four onsite inspections at BTL occurred, yet none of these focused on the Environmental Protection SCA. As stated above in Chapter 1(vi), CELA **recommends** that information

⁵² Nordion, "2017 Annual Compliance Report" (2 July 2018), online: https://www.nordion.com/wp-content/uploads/2018/07/2017_ACR_Amendment_1_Final_Redacted_July-2018.pdf

be included in the report for each licensee describing why the environmental protection SCA was not covered in a given year.

Environmental Protection

Effluent and Emission Controls

Licence condition 10.1 requires that BTL “shall implement and maintain an environmental protection program.” Page 121 of the ROR, however, states that “There are no radiological releases (liquid or airborne) that require controls or monitoring” and later adds that “BTL does not conduct environmental monitoring around its facility.” On page 120 the ROR also states that “BTL does not have identified radioactive releases to the environment.” CELA reiterates comments made by Northwatch in its submission commenting on last year’s ROR, and **asks** that the CNSC to resolve this discrepancy: how can the ROR state BTL does not have “identified radiological releases” if it does not have any controls or monitoring in place? There are radiological releases within the facility, as described in the Radiation Protection chapter of the ROR and its review of worker protection. Thus, we **request** the ROR substantiate any statement that there are no identified releases.

Additionally, there appears to be other airborne emissions from BTL that could require controls or monitoring. CELA **recommends** including brief information on whether any monitoring or control is carried out with respect to these non-radioactive releases, and if not, CELA **recommends** including information on the basis for any decision not to carry out such control or monitoring.

Waste Management

CELA reviewed Best Theratronics Annual Compliance Report.⁵³ The report comments there is 8115.13 kg of depleted uranium “awaiting proper disposal through the end of life management program.”⁵⁴ Without the Waste Management Plan, it is unclear what this entails and whether this waste is being stored on site, pending the availability of other long-term waste disposal sites. CELA **requests** further information.

6. Appendix F - Environmental Data

CELA has reviewed the information provided in Appendix F, “*Environmental Data*,” and provides the following comments.⁵⁵

⁵³ Best Theratronics, “Annual Compliance and Performance Report 2017” (15 August 2018), online: http://www.theratronics.ca/PDFs/ACR2017_NSPFOL1402_BestTheratronics.pdf

⁵⁴ *Ibid* p 21

⁵⁵ ROR, *supra* note 1, p 151-160

On page 151, some of the BRR groundwater monitoring results for uranium are approaching the Drinking Water Quality Guideline of 20 µg/L of uranium. The maximum result in 2015 was 18.5 µg/L, in 2016 14.0 µg/L and in 2017 it was 11.0 µg/L. The maximum levels are furthermore far higher than the average uranium concentrations, which range from 0.5 and 1.7 in the years 2013-2017. CELA **recommends** including information as to the possible cause of these fluctuations as well as information on the likelihood that the Drinking Water Quality Guidelines may or may not be exceeded in the future.

On page 153, in Table F-5 on harbour water quality at PHCF, there are exceedances of the CCME water quality guideline for fluoride, every year from 2013 to 2017 (when reading the maximum values measured), and exceedances of the guideline every year from 2015 to 2017 with a uninterrupted upward trend in these averages from 2013 to 2017. CELA also observes exceedances of the CCME water quality guideline for ammonia and ammonium every year from 2013 to 2017 when considering maximum values. CELA **recommends** including information regarding these exceedances on page 49 of the ROR. At the moment it is merely stated that surface water concentrations continue to be *generally* below the CCME water quality guidelines. CELA furthermore **recommends** including information on the likely source of these elevated levels as well as steps that may be taken to reduce these elevated levels if they are caused by activities at PHCF.

On page 154, maximum soil uranium concentrations at CFM are reported, which vary between 11.2 and 21.1 µg/g, while the CCME guideline which is set at 23 µg/g. CELA **recommends** including more information about these elevated levels in the discussion of the historic contamination at the top of page 63 of the ROR (ie. by including a map showing where the samples were collected compared to areas of historic contamination).

On page 157, data presented in table F-14 shows that some of the test results on neighbouring industrial/commercial lands located around BWXT's Toronto facility are approaching the CCME guideline limit of 33µg/g for uranium in soil. CELA **recommends** including further information on these results on page 76 of the ROR. CELA further notes that, on page 76, the ROR mentions the results from residential lands, which at a maximum of 1.6µg/g are well below the 23µg/g limit for uranium in soil on residential lands. The ROR, however, does not mention the industrial/ commercial test results, which at a maximum of 20.6µg/g in 2017 (24.9µg/g in 2013, 22.1µg/g in 2014, 8.7µg/g in 2015 and 13.6µg/g in 2016) are much closer to the guideline limit of 33µg/g for industrial/commercial. CELA furthermore **recommends** including information on likely sources for these higher levels.

On page 158 it appears that there is an error in the title of table F-15. Table F-15 refers to industrial/commercial land, but the table itself speaks of residential locations. We **request** this discrepancy be clarified.

On page 161 in Appendix G, Table G-1, information is provided regarding PHFC's annual releases of uranium into the atmosphere (31.5kg in 2017). Appendix G is, however, barely mentioned in the ROR. Based on CELA's analysis, there are only brief mentions on page 3, 16 and 87 of the ROR, and no actual discussion of the data provided in Appendix G. Additionally, Table G-1 is not mentioned anywhere in the

ROR. It is stated on page 3 of the ROR that Appendix G is a new addition for 2017, which may explain why these total annual numbers are barely used in the ROR. CELA **recommends** that the information provided in Appendix G be further explored and incorporated within the relevant sections of the ROR.

Furthermore, Table 4-3 on page 47 contains uranium air emissions. It demonstrates that quantities of uranium emitted in 2017 at the PHCF was 0.0011kg/h from the UF₆-plant and 0.0005kg/h from the UO₂-plant. This would seem to correspond to an annual total of 4.38kg + 9.636kg = 14.016kg. This does not seem to mirror the annual air emissions of 31.5kg found in Table G-1 on page 161. This may suggest that the data on page 47 only covers part of the total uranium emissions from PHCF or that either Table 4-3 on page 47, or Table G-1 on page 162 contains an error. CELA **recommends** that a better explanation of these numbers be provided in the ROR to clarify the reason for what appears to be a discrepancy in the data provided. If the data provided in Table G-1 is erroneous, CELA **recommends** that the remaining data in Table G-1 be verified as well.

On page 163, appendix G, table G-2, data is provided, which seems to partially overlap with the information found in table F-17 on page 159. The same is the case with Table G-3 on page and Table F-19 on page 159.

In summary, Appendix G appears to provide data that overlaps (in part) with data provided elsewhere in the ROR, including in other appendices. Appendix G furthermore does not mention the various guideline limits, which are relevant to understanding the data provided. It also appears that at least some of the data provided in Appendix G could be incorporated into the various tables in Appendix F. Therefore, CELA **recommends** that Appendix G be reviewed to avoid data that overlaps with information already provided in other appendices to the ROR. If Appendix G is retained in whole or in part, CELA also **recommends** that the annual licence limits be listed in Appendix G, much like what is done in other parts of the ROR, (e.g. on page 159 in Table F-17).

CONCLUSION

CELA's comments to the CNSC for this year's ROR highlight that without a chapter on Waste Management, the scope and depth of the comments public intervenors can provide is severely constrained. We reiterate our recommendation from last year that a Waste Management chapter be a fixture in all RORs.

Additionally, as currently structured, CELA submits the ROR process does not provide equal procedural rights to intervenors and licensees. The Commission denied CELA's request to address the Commission in person at this year's ROR meeting, and respond if needed, to questions. By the CNSC not allowing public intervenors the opportunity to provide oral submissions and respond to comments and questions made by the Commission during the ROR meeting - but providing this opportunity to licensees - creates varying levels of procedural rights. The CNSC's decision to permit oral presentation opportunities to

proponents but not intervenors diminishes the transparency of the proceeding and creates an apprehension of bias, whether perceived or real, in favour of the licensee.

Thank you for this opportunity to provide comments. CELA's summary of recommendations can be found at page 2 of our submission.

All of which is respectfully submitted this 19th day of November 2018:

CANADIAN ENVIRONMENTAL LAW ASSOCIATION



Kerrie Blaise
Counsel



Morten Siersbaek
Counsel