

Thank you for the opportunity to provide comments on the Draft Regulatory Document REGDOC-2.11.2, *Decommissioning* [1]. My comments follow.

1.0 Introduction

Canada has a treaty obligation to comply with the provisions of the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* [2]. This convention entered into force with respect to Canada in 2001 and has provisions that directly concern the decommissioning of facilities containing nuclear substances.

The *Joint Convention* [2] requires Canada to pay due regard to internationally endorsed criteria and standards. In the context of the scope of this draft regulatory document [1], the appropriate internationally endorsed criteria and standards include the following current relevant standards of the International Atomic Energy Agency (IAEA):

- International Atomic Energy Agency, *Decommissioning of Facilities*, General Safety Requirements Part 6, GSR Part 6, 2014 [3];
- International Atomic Energy Agency, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities*, Specific Safety Guide SSG-47, 2018 [4];
- International Atomic Energy Agency, *Classification of Radioactive Waste*, General Safety Guide GSG-1, 2009 [5];
- International Atomic Energy Agency, *Disposal of Radioactive Waste*, Specific Safety Requirements SSR-5, 2011 [6];
- International Atomic Energy Agency, *Near Surface Disposal Facilities for Radioactive Waste*, Specific Safety Guide SSG-29, 2014 [7]; and
- International Atomic Energy Agency, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*, Specific Safety Guide SSG-23, 2012 [8].

Regrettably, this draft regulatory document [1] is non-compliant with these international safety standards in at least two critical areas.

2.0 Non-Compliances with International Safety Standards

2.1 Use of a Proscribed Decommissioning Strategy

This draft regulatory document [1] promotes the use of an *in situ* decommissioning strategy (entombment) for “legacy” nuclear facilities (See Sections 4 and 6.3). The use of an *in situ* decommissioning strategy is specifically proscribed by international standards for planned decommissioning. The International Atomic Energy Agency (IAEA), defining the safety requirements for the decommissioning of facilities in *General Safety Requirements Part 6: Decommissioning of Facilities* [3], describes two possible decommissioning strategies, namely *immediate dismantling* and *deferred dismantling*. In discussing these two strategies, the IAEA notes the inappropriateness of entombment, as follows [3]:

1.10. A combination of these two strategies may be considered practicable on the basis of safety requirements or environmental requirements, technical considerations and local conditions, such as the intended future use of the site, or financial considerations. Entombment, in which all or part of the facility is encased in a structurally long lived material, is not considered a decommissioning strategy and is not an option in the case of planned permanent shutdown. It may be considered a solution only under exceptional circumstances (e.g., following a severe accident).

Further explanation regarding the inappropriateness of entombment as a decommissioning strategy is provided in the IAEA's Specific Safety Guide SSG-47, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities* [4]:

5.17. Entombment, in which all or part of the facility is encased in a structurally long lived material, should not be considered an acceptable strategy for planned decommissioning. It might be considered as a last option for managing facilities that have been damaged in an accident, if other options are not possible owing to high exposures of workers or technical difficulties.

5.18. Even under exceptional circumstances, the choice of entombment might lead to technical and regulatory difficulties, owing to a lack of specific regulations and guidance in the State and a lack of acceptability of entombment. Additionally, the intention to apply entombment might not be accepted by the public. In this context, all efforts should be made to reduce the parts of the facility that will be subject to entombment and to reduce to the extent possible the radioactive inventory that will be encased on the site, especially the long lived radionuclides. Entombment actions should not reduce the technical feasibility of surveillance and maintenance of the remaining barriers. If entombment is selected, it will impose a burden on future generations owing to the need for long term monitoring of the site and owing to possible future actions necessary to prevent and reduce leakages of radioactive material from the facility.

2.2 Placing an Undue Burden on Future Generations

This draft regulatory document [1], in the context of “legacy” nuclear facilities, promotes the use of institutional controls that are not consistent with internationally-accepted practice.

Internationally-accepted practice is that the need for any institutional controls should cease after a period of a few hundred years, as institutional controls cannot be relied upon to ensure safety beyond that period [6 – 8]. This draft regulatory document [1], however, assumes that institutional control of “legacy sites” will be maintained for “the foreseeable future” (See Section 4).

As noted above, this will impose a burden on future generations owing to the actions necessary to safely maintain the facility into the indefinite future and prevent intrusion into the site by humans and non-human biota.

The maintenance of institutional controls has an associated cost. In admitting to an “indefinite” period of institutional controls, the authors are admitting to an “infinite” cost. The passing on of costs to future generations violates the “polluter pay” principle of the Government of Canada’s Radioactive Waste Policy Framework [9].

It would be unwise for Canada to accept this draft regulatory document [1], as Canada would leave itself at risk of “infinite” liabilities.

3.0 Damage to the Relationship with International Partners

Noting that Canada has a treaty obligation under the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* [2] to pay due regard to internationally endorsed criteria and standards with respect to radioactive waste management, our international partners will likely be concerned over Canada’s use of a decommissioning strategy that is specifically proscribed by international standards.

Additionally, Canada has treaty obligations under the *Comprehensive Economic and Trade Agreement* with the European Union (CETA) [10]. In ratifying CETA, Canada has expressly reaffirmed (Article 24.4 of CETA) *its commitment to effectively implement in its law and practices, in its whole territory, the multilateral environmental agreements to which it is party*. This would, of necessity, include its obligations with respect to radioactive waste management under the *Joint Convention* [2].

The promotion of the use of an *in situ* decommissioning strategy that is specifically proscribed by international standards will be seen as a contravention of Canada’s obligations under the *Joint Convention* [2], and, hence, a contravention of Article 24.4 of CETA [10].

4.0 Inequitable Treatment of Rural Canadians

Two Provincially-owned utilities, in Ontario and Québec, have nuclear reactors that have reached, or are close to reaching, end-of-life (Gentilly-2, Pickering). These nuclear reactors are located in urban or extra-urban communities. In both cases, the end state for decommissioning is the removal of the radioactive materials, with subsequent restoration to the initial state or repurposing [11, 12].

In contrast, the Federally-owned “legacy” reactors (NPD, WR-1) are located in rural communities and the currently-planned end state is that a significant amount of low-level and intermediate-level radioactive wastes will be left on-site by the *in situ* decommissioning [13, 14].

The *in situ* decommissioning of these “legacy” nuclear reactors will create near-surface inventories of radioactive materials that will remain radiological hazards for tens of thousands of years (see, for example, Figure G-75 of [15]). This is a period of time that is far in excess of the period in which institutional controls can be relied upon to ensure safety [6 – 8]. Radioactive material will migrate away from the entombed reactor and give rise to radiological exposures to humans and non-human biota (see, for example, Table 7.3.8-1 of [14]). Hence, future generations of rural residents will be required to endure the burden of a radiologically-contaminated environment created by the use of this internationally-proscribed decommissioning strategy, in contrast to urban Canadians who are promised an environment free from radiological contamination.

5.0 Damage to Regulatory Credibility

This draft regulatory document [1] promotes the use of an *in situ* decommissioning strategy (entombment) for “legacy” facilities, that:

- a) is specifically proscribed by international standards for planned decommissioning;
- b) is fiscally unsound since it places an open-ended financial burden on the taxpayers of Canada; and
- c) creates an inequitable outcome for rural Canadians.

The promotion of an *in situ* decommissioning strategy will damage the credibility of the CNSC in the eyes of Canadians.

6.0 Concluding Remarks and Recommendation

The draft regulatory document [1] should include the Joint Convention [2] and the relevant internationally endorsed criteria and standards, e.g., [3 – 8], as references. The draft regulatory document should be reviewed against these safety requirements and revised, as necessary, to ensure compliance with Canada's treaty obligations and these internationally endorsed standards. In particular, the finalized regulatory document should not allow the use of a decommissioning strategy (*in situ* decommissioning) that is specifically proscribed by international standards for planned decommissioning, is fiscally unsound, and that creates an inequitable outcome for rural Canadians.

7.0 References

- [1] Canadian Nuclear Safety Commission, Draft Regulatory Document REGDOC-2.11.2, *Decommissioning*, 2019 (<http://www.nuclearsafety.gc.ca/eng/pdfs/regulatory-documents/regdoc2-11-2/REGDOC-2-11-2-Decommissioning.pdf>)
- [2] International Atomic Energy Agency, *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, International Law Series No. 1, 2006.
- [3] International Atomic Energy Agency, *Decommissioning of Facilities*, General Safety Requirements Part 6, GSR Part 6, 2014.
- [4] International Atomic Energy Agency, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities*, Specific Safety Guide SSG-47, 2018.
- [5] International Atomic Energy Agency, *Classification of Radioactive Waste*, General Safety Guide GSG-1, 2009.
- [6] International Atomic Energy Agency, *Disposal of Radioactive Waste*, Specific Safety Requirements SSR-5, 2011.
- [7] International Atomic Energy Agency, *Near Surface Disposal Facilities for Radioactive Waste*, Specific Safety Guide SSG-29, 2014.
- [8] International Atomic Energy Agency, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*, Specific Safety Guide SSG-23, 2012.
- [9] Natural Resources Canada, *Radioactive Waste Management Framework*, 1996 (as amended).
- [10] Canada/European Union, *Comprehensive Economic and Trade Agreement (CETA) between Canada, of the one part, and the European Union [and its member states, the Kingdom of Belgium, the Republic of Bulgaria, ...] of the other part*, 2017.
- [11] Hydro-Québec, *FAQ – Decommissioning of Gentilly-2 Facilities*, (<http://www.hydroquebec.com/decommissioning-gentilly-2/questions.html>).
- [12] Ontario Power Generation, *Repurposing Pickering Preliminary Assessment Report*, (<https://www.opg.com/document/repurposing-pickering-preliminary-assessment-report-pdf/>)

- [13] Canadian Nuclear Laboratories, *Environmental Impact Statement: Nuclear Power Demonstration Closure Project*, 64-509200-ENA-004, Revision 0, 2017 September 28.¹
- [14] Canadian Nuclear Laboratories, *Environmental Impact Statement: In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site*, WLDP-26000-ENA-001, Revision 1, 2017 September 13.
- [15] Canadian Nuclear Laboratories, *Post Closure Safety Assessment Report – NPD Closure Project*, 64-508760-ASD-003, Revision 0, 2017 September 28.

¹ Please note that the cover page of the Draft EIS [1] uses the CNL number 64-508760-ENA-004, whereas the CNL signature page uses the CNL number 64-509200-ENA-004.