



Faculty of Arts  
Liu Institute for Global Issues  
6476 NW Marine Drive  
Vancouver, BC Canada V6T 1Z2

Phone 604 822 1672

To  
Standing Committee on Environment and Sustainable Development  
House of Commons  
Ottawa

4 March 2022

**Re: Study on Nuclear Waste Governance in Canada**

Dear Committee Members,

Thank you for the opportunity to speak with you on March 1. Please allow me to follow up on two of the topics that were raised during the question & answer session that I could only address very briefly in my answers.

1. One question that came up concerned the potential conflict of interest resulting from the current governance structure where the Canadian Nuclear Safety Commission reports to the Minister of Natural Resources. Article 8 of the international Convention on Nuclear Safety, which Canada has signed and ratified, calls upon signatories to “take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy”. I do not think the current reporting structure constitutes an effective separation. Unfortunately, the situation for any regulatory agency is like that of Pompeia, Julius Caesar’s wife, of whom, Caesar is supposed to have said, “Caesar’s wife must be above suspicion”.
2. The current structure naturally induces suspicion. The problem is that Natural Resources Canada has the responsibility to develop and promote nuclear energy. Because the CNSC is responsible for the protection of “health, safety, security and the environment”, its ideal role can, on occasion, be at odds with the promotion of nuclear energy. Conversely, when regulating a technology that is being promoted by the Ministry, the regulator might be motivated to adopt practices that prioritize the potential for rapid deployment rather than ensuring a higher degree of safety and precaution.
3. Looking at some of the presentations of the CNSC on Small Modular Reactors, a set of technologies I have been studying very closely for over a decade, I cannot but



observe the appearance of willingness to provide an easy path to licensing. At the 27th Annual Regulatory Information Conference in 2015, for example, a CNSC presentation entitled “Regulation of Small Modular Reactors (SMRs) in Canada: Progress and Challenges” promises that CNSC is “committed to setting the right level of requirements and guidance to enable flexibility without compromising safety”. While CNSC claims to be committed to not compromise safety, the emphasis clearly is on the ease with which a reactor vendor can get the requisite license for construction of an SMR.

4. The second topic that was raised was that of the proliferation risks associated with pyroprocessing. That technology was developed by the US Argonne National Laboratory and has been examined carefully by technical experts. The general conclusion is that pyroprocessing does increase the risk of proliferation, and that risk is roughly comparable to the risk associated with the traditional reprocessing technology called PUREX, which has been used by many countries to produce plutonium for nuclear weapons.<sup>1</sup>
5. The proliferation risk stems from the fact that pyroprocessing separates out the radioactive fission products in spent fuel. These fission products provide a severe radiation barrier to handling spent fuel. Without this barrier, the plutonium can be extracted in pure form in a relatively cheap and small laboratory hot cell. To understand more about this issue, I refer you to two open letters written by US nonproliferation experts and former government officials and advisors with related responsibilities.<sup>2</sup>

Please feel free to email me if you need any further information. You can contact me at [m.v.ramana@ubc.ca](mailto:m.v.ramana@ubc.ca).

With best wishes,

*M. V. Ramana*

M. V. Ramana

Professor and Simons Chair in Disarmament, Global and Human Security

Director, Liu Institute for Global Issues

School of Public Policy and Global Affairs

University of British Columbia

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<sup>1</sup> R. Bari et al., “Proliferation Risk Reduction Study of Alternative Spent Fuel Processing” (Brookhaven: Brookhaven National Laboratory, July 2009), <https://www.bnl.gov/isd/documents/70289.pdf>.

<sup>2</sup><https://thetyee.ca/Documents/2021/05/26/OpenLetterNuclearFuelJustinTrudeau.pdf>; <https://npolicy.org/wp-content/uploads/2021/08/Second-Trudeau-Letter.pdf>