

August 21, 2018

**Office of the Auditor General of Canada
Commissioner of the Environment and Sustainable Development
Attention: Petitions
240 Sparks Street
Ottawa, Ontario K1A 0G6**

Via e-mail: petitions@oag-bvg.gc.ca

Need for a national policy on decommissioning of nuclear reactors

This petition is being submitted to the Office of the Auditor General of Canada in accordance with section 22 of the *Auditor General Act* by Concerned Citizens of Renfrew County and Area and the Canadian Environmental Law Association. Information about our groups can be found in the Appendix.

Purpose of Petition

Our goal in submitting this petition is to request that the Minister of Natural Resources Canada address risks to Canadians' health, safety and the environment associated with decommissioning of nuclear reactors. We seek a formal commitment to fill policy gaps in this area in accordance with international and national commitments made by the Government of Canada under the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* and under the *Radioactive Waste Policy Framework*. We are urging quick action on this matter, as decisions are imminent regarding approval of decommissioning projects that do not conform to international guidance. We wish to create a formal public record of responses to the questions in this petition.

Background

The Government of Canada's support for nuclear power research and development has included creation of the crown corporation Atomic Energy of Canada Ltd. (AECL) in 1952; construction and operation of the Nuclear Power Demonstration (NPD), Douglas Point and Gentilly-1 "prototype" nuclear power reactors; creation and operation of national research laboratories with additional nuclear reactors at Chalk River, Ontario and Pinawa, Manitoba; and creation of another corporation in 2014, the Canadian Nuclear Laboratories (CNL), to operate all federal nuclear reactor sites.

The reactor sites contain the bulk of a multi-billion-dollar federal nuclear waste liability. According to data from NRCAN (2018), six federal reactors have generated 282 cubic meters of high-level waste that is eventually supposed to be put in a geological repository created pursuant to the 2002 *Nuclear Fuel Waste Act*.

However, the Government of Canada has no plan or policy to address the much larger volumes of "non-fuel" intermediate-level radioactive waste (20,593 cubic meters) and low-level radioactive waste (147,949 cubic meters, plus 383,909 cubic meters of contaminated soil) at

the federal reactor sites as of December 2016 (NRCan 2018). In total, the federal government is responsible for 2.4 million cubic meters of radioactive waste. The remainder is mainly refinery waste and contaminated soil in the Port Hope area that did not result from reactor operations.

Reactor wastes contain large amounts of long-lived fission products. Furthermore, during operation, non-radioactive elements (hydrogen, carbon, chlorine, iron, nickel, etc.) in concrete and metal reactor components are transformed into their radioactive counterparts by neutron bombardment. The radioactivity of some of these “activation products” approaches levels in spent fuel and can persist for tens to hundreds of thousands of years.

The total cost to deal with the results of decades of nuclear activities at the federal nuclear reactor sites and with the cleanup of waste at orphan sites for which the federal government has assumed responsibility was estimated at over \$7.9 billion as of 31 March 2016 (Auditor General of Canada 2017).

The International Atomic Energy Agency requires Member States to establish national policies for managing radioactive waste and for decommissioning nuclear facilities (IAEA 2009; 2014). Our previous Petition 411 entitled “Policies and strategies for the management of non-fuel radioactive waste” described in detail the absence of such policies and strategies in Canada.

The Minister’s response to Petition 411, issued on January 23, 2018, said that Natural Resources Canada is “satisfied” that Canada’s *Radioactive Waste Policy Framework* provides the “necessary policy direction”. However, in a July 17, 2018 letter to Francis Scarpaleggia, M.P. for Lac-Saint-Louis, Minister Carr said “In short, Canada does not yet have a federal policy for the long-term management of non-fuel radioactive waste” (Carr 2018).

According to the *Radioactive Waste Policy Framework* “The federal government has the responsibility to develop policy, to regulate, and to oversee producers and owners to ensure that they comply with legal requirements and meet their funding and operational responsibilities in accordance with approved waste disposal plans” (NRCan 1996).

How is the Government of Canada decommissioning its “prototype” nuclear reactors?

Given the lack of a federal policy for non-fuel radioactive waste, the lack of a federal policy on decommissioning of nuclear facilities, and the lack of approved waste disposal and decommissioning plans for its own reactors, it appears that the Government of Canada is not fulfilling its responsibilities under the *Radioactive Waste Policy Framework*.

On July 16, 2014 the Canadian Nuclear Safety Commission (CNSC) convened a “hearing” on the NPD, Gentilly-1 and Douglas Point reactors without public notice before a 1-person panel of CNSC President Michael Binder. He gave Atomic Energy of Canada Limited (AECL) a 20-year decommissioning licence for the reactors (CNSC 2014a). On October 22, 2014 another CNSC “hearing” transferred this and four other AECL licenses – including the licence for the Whiteshell Laboratories and its WR-1 reactor - to CNL. This “hearing” was also held before a 1-person panel of the Commission consisting solely of President Michael Binder (CNSC 2014b).

In 2015 the Government of Canada transferred all its shares in CNL to a consortium of U.S., U.K. and Canadian-based corporations, and gave the consortium a multi-billion dollar, 10-year contract to find fast and cheap ways to reduce the \$7.9 billion nuclear waste liability on the federal balance sheet. With no public input, minimal federal oversight, and no federal policy, foreign-owned companies are being given large amounts of public funds with a broad mandate to conduct decommissioning and waste management activities at federal nuclear facilities.

An April 6, 2016 meeting provided CNSC's Commissioners with an opportunity to review CNL's performance at four federal reactor sites. CNSC Staff told Commissioners that CNL wishes to "accelerate" decommissioning of the WR-1 and NPD reactors, but provided no details. Commissioners asked if decommissioning of the Gentilly-1 and Douglas Point reactors will be accelerated as well. They also asked about possible links between CNL and Hydro-Quebec regarding decommissioning of the Gentilly-2 reactor. CNSC Staff declined to discuss these matters in detail (CNSC 2016).

Document CMD 18-M30 - prepared by CNSC Staff for another "progress update" on August 22, 2018 - still provides no information about accelerated decommissioning of the Gentilly-1 and Douglas Point reactors. It states that Gentilly-1, Douglas Point and NPD have been maintained in a "storage-with-surveillance" phase since reactor operations ceased in the 1980s. CNSC Staff call this a "deferred decommissioning strategy".

With regard to CNL's plans for accelerated decommissioning of the NPD and WR-1 reactors, CNSC Staff note that "the proposed decommissioning approach and end-state for these projects vary from what has been previously approved by the Commission." Staff further explain that CNL no longer intends to dismantle the NPD reactor, but to entomb it.

One might assume that decommissioning activities are not currently taking place and waste streams are not being generated under the current CNSC licences for the federal reactor sites. But in the case of the Gentilly-1 reactor, CMD 18-M30 says:

"CNL is progressively dispositioning low-level waste stored in the reactor building. 45,000 kg of wastes have been safely transferred to a licensed waste processing facility and a contract is in place to retrieve and transfer an additional 250,000 kg of waste. Processing residues will be sent to CRL for interim storage" (CNSC 2018).

These activities are taking place in the absence of either a detailed decommissioning plan or an approved waste disposal plan for the Gentilly-1 reactor.

CNL recently released an *Integrated Waste Strategy* (CNL 2017c) that calls for radioactive waste at the WR-1, Gentilly-1, and Douglas Point reactors to be consolidated at the Chalk River Laboratories (CRL). CMD 18-M30 does not mention this *Strategy*. It is unclear whether it has gone through formal approval processes, or even what formal approvals are required.

Under this *Strategy*, CNL plans to ship all high-level spent fuel wastes currently at federal reactor sites to Chalk River. CNL apparently intends to do this without formal approval. At a recent meeting of stakeholders living near the Chalk River Laboratories, CNL announced its plan to build new dry storage facilities at CRL for the WR-1 high-level fuel wastes, and to transport

these high-level wastes from Pinawa, Manitoba to Chalk River, Ontario starting next year. It is unclear if CNSC would hold a licence hearing for this proposed new high-level waste facility.

Entombment is not an acceptable approach to reactor decommissioning

The federal government appears to be ignoring its international commitments made under the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*. Accelerated decommissioning of the WR-1 and NDP reactors, as described in draft environmental impact statements prepared by CNL (2017a; 2017b), would “entomb” the reactors in concrete and grout and then abandon them “in situ” - rather than dismantling the reactors and restoring the sites to greenfield status. These CNL proposals would create permanent disposal facilities for large quantities of long-lived radioactive waste, only a few tens of meters from major water bodies (the Winnipeg and Ottawa Rivers).

If decommissioning of the WR-1 and NPD reactors did not involve creation of permanent nuclear waste disposal facilities, these projects could have proceeded without environmental assessments. Changes made in 2012 to the *Canadian Environmental Assessment Act* (CEAA) and its *Regulations Designating Physical Activities* removed decommissioning of nuclear facilities, including nuclear reactors, from the CEAA “project list”, despite the potential for decommissioning activities to create significant negative environmental, social and economic impacts and to trigger significant public concerns. These changes also gave CNSC sole responsibility for determining the scope of environmental assessments of nuclear projects, and made CNSC the final authority for deciding on their acceptability.

CNSC initiated environmental assessments of the two reactor entombment proposals even though they clearly do not align with guidance in General Safety Requirement 6 (GSR 6) issued by the International Atomic Energy Agency (IAEA), which administers the *Joint Convention*:

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) (IAEA 2014).

Environmental assessments of entombment of the NPD and WR-1 reactors commenced with release of project descriptions in May 2016. Citing IAEA guidance, retired AECL scientists quickly voiced strong objections to CNL’s proposals. CNSC Staff “dispositioned” their objections as follows:

Yes, the document referenced, IAEA GSR 6, indicates that entombment is not recognized internationally, in principle, as a preferred decommissioning strategy (entombment may be considered a solution only under exceptional circumstances, such as following a severe accident). The IAEA is currently working on a document to provide guidance with respect to their position on entombment in situ decommissioning, the applicability of entombment in the context of decommissioning and in particular, the regulatory requirements and expectations for applying entombment as a decommissioning option strategy. There is no scheduled date for the publication of this document; however,

CNSC staff will keep apprised of its development to inform this EA and licensing review process. (CNSC 2017)

This raises the question of whether CNSC Staff are actively promoting reactor entombment as a preferred Canadian policy at international forums. The concluding slide of a May 2018 presentation to the International Nuclear Regulators Association (INRA) by CNSC Vice President Ramzi Jammal says “Items for INRA discussion - In situ decommissioning” (Jammal 2018).

The Government of Canada – not CNSC - must fill the policy void

The IAEA provides detailed guidance to Member States on how to develop policies for both decommissioning (IAEA 2011) and radioactive waste management (IAEA 2009). IAEA guidance states that policies shall be developed and approved by the federal government - not by a regulatory agency such as CNSC. The IAEA also states that the public should be consulted on the development of these policies (IAEA 2011).

The Government of Canada must develop appropriate policies, with input from First Nations and the public, before proceeding with reactor decommissioning and nuclear waste disposal projects; so as to ensure that sustainable development goals are met, that the public and the environment are protected, and that undue burdens are not placed on future generations.

Questions:

We seek responses to these questions from the Minister of Natural Resources Canada. Because the matters discussed in this petition have important implications for the health of Canadians and their environment, we ask that this petition also be sent for information to the Minister of Health Canada and to the Minister of Environment and Climate Change Canada.

1. Why is there no federal policy for management of non-fuel radioactive waste? Why is there no federal policy for decommissioning of nuclear facilities? Will the Government of Canada commit to developing policies and strategies in these areas? Will the Government of Canada commit to consult First Nations and the public on such policies?
2. Why has the Government of Canada not carried out a strategic environmental assessment of a decommissioning and waste management strategy for its own shut-down reactors? How has the Government of Canada assessed the costs and benefits, and the health and environmental aspects, of different reactor decommissioning strategies, including prompt dismantlement, prolonged storage followed by dismantlement, and in-situ decommissioning?
3. Why are radioactive wastes being removed from the Government of Canada’s reactors in the absence of approved detailed decommissioning plans and approved waste disposal plans? Why has there been no public discussion or environmental assessment of plans to ship all federal radioactive wastes - including high-level wastes from the WR-1, Gentilly-1, and Douglas Point reactors - to the Chalk River Laboratories?
4. Does the Government of Canada have an official position with regard to entombment of nuclear reactors? Is the Government of Canada actively seeking to change IAEA guidance that entombment is not an option for planned permanent shutdown of reactors?

5. Given that entombment is not recommended by the IAEA except in emergencies, why is the Government of Canada, through the CNSC, allowing the environmental assessment of entombment of its WR-1 and NPD reactors? Is the Government of Canada also considering entombment of its Gentilly-1 and Douglas Point reactors? If not, what are its plans for these reactors?

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Appendix

Concerned Citizens of Renfrew County and Area (CCRCA) is a volunteer-based citizens' group, formed in 1978 in response to a 15-year federal-provincial, \$700 million study of the feasibility of disposing of high level nuclear waste in plutonic rock. For more than 20 years, CCRCA has intervened at all licensing hearings on Chalk River Laboratories (CRL) held by the Canadian Nuclear Safety Commission (and prior to the year 2000, by the Atomic Energy Control Board). Our interventions have highlighted pollution issues such as the plumes from the leaking fuel bays and waste management areas and major safety concerns such as the high level liquid wastes in the "Fissile Solution Storage Tank". We have expressed support for new CRL facilities that have reduced pollution levels (such as the Liquid Waste Treatment Centre) and that have placed radioactive wastes in more secure, monitored above-ground storage. We have consistently called for greater transparency and openness in monitoring and reporting on the state of the CRL environment. We believe that our efforts have raised public awareness about risks associated with Canada's nuclear waste liabilities, and have helped persuade government decision-makers to allocate significant resources to clean-up projects such as the Nuclear Legacy Liabilities Program.

The Canadian Environmental Law Association (CELA) works to protect human health and our environment by seeking justice for those harmed by pollution and by working to change policies to prevent such problems in the first place. For almost 50 years, CELA has used legal tools to increase environmental protection and safeguard communities. CELA is an Ontario legal aid environmental law specialty clinic. CELA has worked on issues related to nuclear liabilities, legacy wastes, and nuclear safety over many years. This has included law reform such as the work on replacing the *Nuclear Liability Act*, and amendments to the *Canadian Environmental Assessment Act* in various iterations. Case work has included work at the Chalk River facility, the SRB facility in Pembroke, transportation of nuclear waste, and licensing hearings at the nuclear power plants at Darlington, Pickering, Bruce, Point Lepreau and Gentilly II among others. Current case work includes a number of nuclear waste environmental assessment files, including the proposed Deep Geologic Repository at Kincardine, the ongoing work of the Nuclear Waste Management Organization, the proposal for a Near Surface Disposal Facility at Chalk River, and proposals to abandon in place the former nuclear reactor facilities at Rolphton and Whiteshell.

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Concerned Citizens of Renfrew County and Area

Canadian Environmental Law Association

We hereby submit this petition to the Auditor General of Canada under section 22 of the *Auditor General Act*.



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