Brief to the Standing Committee on Environment and Sustainable Development

Canada's Nuclear Waste Inventory

Concerned Citizens of Renfrew County and Area, February 21, 2022

The Government of Canada must take responsibility for developing a policy and strategy for managing Canada's nuclear waste inventory.

The International Atomic Energy Agency (IAEA) safety standard SSR-5, *Disposal of Radioactive Waste*,[1] requires the Government to take responsibility for "Defining the national policy for the long term management of radioactive waste of different types."

Canada's *Seventh National Report* for the IAEA's *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* identifies four types of radioactive waste: high-level waste, intermediate-level waste, low-level waste, and uranium mine and mill tailings.[2]

As a Party to the *Joint Convention*, Canada must submit a national report to each review meeting of Contracting Parties, generally held every three years. The report must include i) an inventory of spent fuel, including information (if available) on its mass and its total activity; and ii) an inventory of other radioactive waste with appropriate information available, such as volume or mass, activity and specific radionuclides.

Canada's *Seventh National Report* has information on volume and mass, but not activity, for spent fuel. For other types of radioactive waste it has information on volume, and some very limited information on activity, but essentially no information on specific radionuclides. Notably, information on activity and specific radionuclides is lacking for the Government's own radioactive waste. This makes it impossible, at present, to develop an acceptable long-term management strategy.

According to this *Report*, Canada has 218 million tonnes of uranium mine and mill tailings, 2.1 million cubic meters (m^3) of low, 16 thousand m^3 of intermediate, and 13 thousand m^3 of high-level waste. NRCan also prepares a radioactive waste inventory with data on waste volume and mass, but not radioactivity, for four waste classes. It

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[1] Disposal of Radioactive Waste. IAEA Safety Standards Series No. SSR-5. Vienna, 2011. https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1449_web.pdf

[2] Canadian National Report for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Seventh Report. Canadian Nuclear Safety Commission, Ottawa, 2020. https://nuclearsafety.gc.ca/eng/resources/publications/reports/jointconvention/seventh-report/seventh-report-joint-convention.cfm

reports similar quantities of high and intermediate-level waste, but more low-level waste (2.5 million m^3) and uranium mill tailings and waste rock (385 million tonnes).[3]

Excluding mining wastes, the NRCan inventory indicates that the federal government, through its crown corporation Atomic Energy of Canada Limited (AECL), is "responsible" for over 90% of Canada's 2.5 million m^3 of radioactive waste, 2 million m^3 of which is so-called "historic waste" found in the Port Hope, Ontario area.

The NRCan inventory projects that future work at AECL sites – mostly at the the Chalk River Laboratories, the largest federal energy research and development complex, on the shores of the Ottawa River, 180 km upstream from the nation's capital -- will generate an additional 888 million cubic meters of federal radioactive waste by 2100.

Although the IAEA says that national policy should identify arrangements for the management of the main types of radioactive waste, the new draft policy released by NRCan does not. It merely says that nuclear waste owners and generators will "develop and maintain an integrated strategy for radioactive waste management and decommissioning activities". [4]

In November 2020 former NRCan Minister Seamus O'Regan assigned the task of developing an integrated strategy – including for federal waste - to the industry-owned Nuclear Waste Management Organization (NWMO).[5] Its "options" report for a national radioactive waste strategy excludes high-level radioactive waste, uranium mine tailings and waste rock, and 90% of low- and intermediate-level radioactive waste.[6]

As the owner of so much of Canada's radioactive waste, the Government of Canada should create a publicly-owned decommissioning and radioactive waste management agency, and give this new agency the mandate to develop an integrated national strategy to accompany its new radioactive waste policy.

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[3] Inventory of Radioactive Waste in Canada 2019. Natural Resources Canada. Ottawa, 2021. https://www.nrcan.gc.ca/sites/nrcan/files/energy/pdf/uranium-nuclear/17-0467%2520Canada%2520Radioactive%2520Waste%2520Report_access_e.pdf

[4] Modernizing Canada's Policy for Radioactive Waste Management and Decommissioning - Draft for Public Comment. Natural Resources Canada, Ottawa, 2022. https://www.rncanengagenrcan.ca/sites/default/files/draft_policy_on_radioactive_waste_management_and_decommissioning_-_english_-_jan_26_final.pdf

[5] News release: NWMO asked to lead development of an integrated radioactive waste management strategy for Canada. Nuclear Waste Management Organization, Toronto, 2020. https://www.nwmo.ca/en/More-information/News-and-Activities/2020/11/12/16/33/NWMO-asked-to-lead-development-of-an-integrated-radioactive-waste-management-strategy-for-Canada

[6] Integrated Strategy for Radioactive Waste Project Report. Nuclear Waste Management Organization, Toronto, 2021. https://radwasteplanning.ca/sites/default/files/project_report.pdf