

Brief to the Standing Committee on Environment and Sustainable Development

Changes in reporting of federal radioactive waste between 2016 and 2019

Concerned Citizens of Renfrew County and Area, February 28, 2022

Tables 1-3 show data for Atomic Energy of Canada Limited (AECL) sites taken from the 2016¹ and 2019² radioactive waste inventories done by Natural Resources Canada (NRCan). “Operations” wastes and “decommissioning” wastes are combined in Tables 1-3.

Table 1 - Current federal radioactive waste in cubic meters (m³)

AECL site	High		Intermediate		Low		Contaminated soil	
	2016	2019	2016	2019	2016	2019	2016	2019
Year of Inventory								
	2016	2019	2016	2019	2016	2019	2016	2019
Chalk River	151	143	19,468	1,382	136,409	149,674	383,018	156,276
Whiteshell	29	29	863	240	21,073	16,861	225	0
NPD	0	0	N/A	389	12	2,289	0	0
Gentilly-1	13	13	58	0	423	161	185	0
Douglas Point	89	89	60	6	32	92	68	0
Total (all sites)	282	274	20,449	2,017	157,949	169,077	383,496	156,276

Unexplained reduction in federal intermediate-level waste

The federal inventory of intermediate-level waste (ILW) was reduced by 90% between 2016 and 2019. Reductions occurred at four AECL sites. At the Chalk River Laboratories, the 19,468 m³ of ILW in 2016 was reduced to 1,382 m³ in 2019. The 2019 inventory does not provide an explanation for the 90% reduction in federal ILW, which is defined in both inventories as “waste that typically exhibits sufficient levels of penetrating radiation to warrant shielding during handling and interim storage.”

It should be noted that the 2016 and 2019 inventories lack information on levels of radiation in waste. Waste management cannot be based on volume alone. Information on activity of specific radionuclides is essential for proper classification, management, and governance of radioactive waste.

Unexplained reduction in federal radioactively contaminated soils

Radioactively contaminated soils at AECL sites were reduced by 59% between 2016 and 2019. At three sites (Whiteshell, Gentilly-1, Douglas Point) all contaminated soils were removed from the 2019 inventory. Contaminated soils at the Chalk River Laboratories were reduced from 383,018 m³ to 156,276 m³. No explanation is given for these reductions in volumes of radioactively contaminated soils.

¹ *Inventory of Radioactive Waste in Canada 2016*. Natural Resources Canada, 2018. https://www.nrcan.gc.ca/sites/nrcan/files/energy/pdf/uranium-nuclear/17-0467%20Canada%20Radioactive%20Waste%20Report_access_e.pdf

² *Inventory of Radioactive Waste in Canada 2019*. Natural Resources Canada, 2021. https://www.nrcan.gc.ca/sites/nrcan/files/energy/pdf/uranium-nuclear/17-0467%2520Canada%2520Radioactive%2520Waste%2520Report_access_e.pdf

Tables 2 and 3 compare data in the 2016 and 2019 inventories for projected future volumes of radioactive waste at AECL sites in 2050 and 2100.

Table 2 - Projected federal radioactive waste (m³) in 2050

Facility	High		Intermediate		Low	
	Year of Inventory					
	2016	2019	2016	2019	2016	2019
Chalk River	167	145	29,402	1,382	717,769	681,122
Whiteshell	29	29	1,556	1,435	21,073	45,217
NPD	0	0	96	389	2,048	2,289
Gentilly-1	13	13	58	319	608	908
Douglas Point	89	89	60	6	101	422
Total (all sites)	298	276	31,172	3,531	741,599	729,958

Table 3 - Projected federal radioactive waste (m³) in 2100

Facility	High		Intermediate		Low	
	Year of Inventory					
	2016	2019	2016	2019	2016	2019
Chalk River	167	145	35,527	6,276	847,591	829,922
Whiteshell	29	29	1,556	1,435	21,073	45,217
NPD	0	0	96	389	2,048	2,289
Gentilly-1	13	13	58	319	7,116	908
Douglas Point	89	89	60	264	6,610	731
Total (all sites)	298	276	37,297	8,683	884,438	879,067

Unexplained changes in projected radioactive waste volumes

Projected ILW volumes for 2050 and 2100 are much lower than the 2019 inventory than in the 2016 inventory. No explanation is given. Projected LLW volumes for 2100 at the Gentilly-1 and Douglas Point reactor sites are much lower in the 2019 inventory than the 2016 inventory. Projected LLW volumes at the Whiteshell Laboratories for 2050 and 2100 are much higher in the 2019 inventory than the 2016 inventory. No explanations for these changes are given.

Recommendations

- NRCan should add information on activity and specific radionuclides to its radioactive waste inventory. This is essential for nuclear waste classification, management, and governance, and is required under article 32(2) of the *Joint Convention*.³
- AECL should provide a full inventory of its wastes that includes information on activity and specific radionuclides, and that resolves the differences between the 2016 and 2019 inventories related to its volumes of current and projected wastes.
- A full inventory of AECL's radioactive wastes should be completed before any permanent waste disposal projects at AECL sites are approved.

³ *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*
<https://www.iaea.org/sites/default/files/infcirc546.pdf>