

The nuclear industry claims an international consensus on burying nuclear waste and points to Sweden and Finland as the poster cases for geological disposal. But the Swedish and Finnish situations are very different from Canada's – the candidate repository locations are in communities that also host reactors, the repository designs are different, the containers are different, and the transportation risk is different. And neither the Swedish nor the Finnish repositories have operating licenses, and as of late 2025 the timeline for a license being issued remains uncertain. The Swedish proposal was submitted in 2011 and has been returned to SKB (the proponent) several times for additional technical work. The Finnish proposal was submitted in 2021 and the Finnish regulator has extended the time required for its internal review; it is unknown when or if an operating license will be issued.

"Further research may not serve to produce the required answer, in fact it may identify further serious problems that simply had not previously been thought of. It is also possible that further work may indicate that an acceptable safety case cannot be made."

Submission to the UK House of Commons Energy and Climate Change Committee Inquiry into the Energy National Policy Statements, Nuclear Waste Advisory Associates, January 2010



"You could dig a deep geological pit, I presume, store it (nuclear waste) underneath there, and that could provide protection."

*The Honourable Herb Dhaliwal,
Minister of Natural Resources and responsible for the
Nuclear Fuel Waste Act's passage in Parliament.
Presenting to Parliamentary Committee Hearing on the
Nuclear Fuel Waste Act, November 2001*

Introducing ... nuclear waste

Nuclear waste is very long-lived and extremely dangerous. High-level nuclear fuel waste is created when nuclear power is used to generate electricity. The waste is a radioactive poison and includes hundreds of different radioactive elements. Even low doses of radiation can be harmful, with the potential to cause cancer, birth defects and other health problems.

The wastes must be strictly isolated from the environment for hundreds of thousands of years. Practically speaking, it must be contained further into the future than we can imagine. If the wastes escape into the environment, the radioactive elements will contaminate the soil, water and air.

By the June 2023, the nuclear industry in Canada had produced over 3.3 million "bundles" of highly radioactive irradiated nuclear fuel waste – commonly referred to as "high level nuclear waste", weighing over 62,000 tonnes. The nuclear industry has predicted that the nuclear waste inventory will double by mid-century. Wastes from future reactors – proposed but not yet constructed – will create additional challenges, with different dimensions and characteristics.



Northwatch

Box 282, North Bay
Ontario P1B 8H2
Tel 705 497 0373
northwatch@northwatch.org
www.northwatch.org

To learn more visit www.nuclearwaste.ca

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Nuclear waste?



NO THANKS!

For 50 years the nuclear industry is searching for a community willing to put itself on the receiving end of all of Canada's highly radioactive nuclear fuel waste

The Nuclear Waste Management Organization

(NWMO) was created by Ontario Power Generation, Hydro Quebec and New Brunswick Power, the generators and owners of nuclear fuel waste. The NWMO was directed by the Nuclear Fuel Waste Act to review three "options" for the long-term management of nuclear fuel waste (continued storage at the reactor site, centralized storage, or geological disposal) between 2002 and 2005.

The Nuclear Waste Management Organization made its recommendation to the federal government in November 2005, calling it "Adaptive Phased Management" and claiming that it combined all three options in a 300-year phased approach moving from storage at nuclear plants to deep burial at what they described as a "central" location (central only because the waste was all to be re-located there). According to the 2005 plan, during the first phase the waste will remain at nuclear plants for 30 years while a centralized site is selected to "host" an underground research laboratory, a deep geological repository for the permanent burial of the wastes, and an optional a shallow underground storage. In the second 30-year phase of the NWMO plan, either a shallow underground facility will be built at the identified site and waste transportation will begin, or waste will remain at the nuclear, plants pending completion of a site research facility and construction of a deep geological repository at the site. In either case, the waste will at some point be moved to the selected site and a deep geological repository constructed. The repository may or may not be closed after the following 240 years.

In 2007 the federal government announced that it had accepted the NWMO plan. In May 2010 the NWMO officially launched their search for a "willing" community. The NWMO has investigated 22 communities since 2010. In 2020 the NWMO shortlisted to two remaining "candidate" sites: the Teeswater site in South Bruce in southwestern Ontario and the Revell site between Ignace and Dryden in northwestern Ontario.

In November 2024 the NWMO announced that it had selected the Revell site between Ignace and Dryden in northwestern Ontario as their proposed site.



German protests against nuclear waste shipments to Gorleben.

Nuclear Waste and Northern Ontario – Our History

In 1973 a three-man commission worked for three months and decided that burying nuclear waste deep in the Canadian Shield was the best way to solve what the nuclear industry saw as their most vexing public relations problem. More than fifty years later, the industry is still searching for that elusive rock.

Since the 1970's, Atomic Energy of Canada Limited has been researching and promoting a "concept" of disposing of nuclear fuel waste by burying it in the Canadian Shield. In the late 1970's and early '80's they investigated a number of northern Ontario communities - Massey, Atikokan, Kirkland Lake, Bancroft - as possible disposal sites, and did "research" near Atikokan and Massey, drilling the rock formations, with uncertain results.

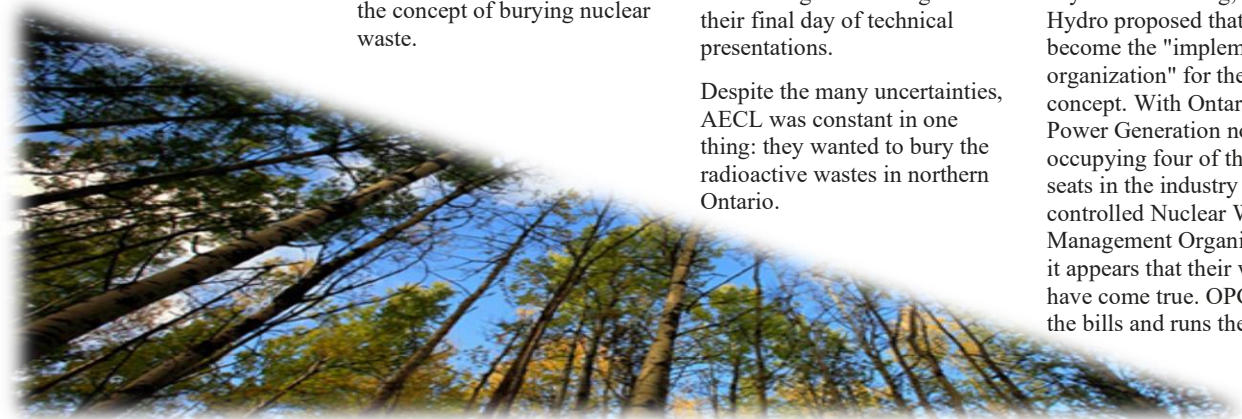
What was certain was that AECL's efforts were not welcomed by local residents. In Massey, a referendum was held, and 88% expressed opposition to AECL's "research" efforts.

The AECL burial concept was the subject of a ten-year federal environmental assessment review and a 13-month hearing. The review ended in March 1998 with the Panel concluding that the AECL concept had not been demonstrated to be safe and acceptable, and that the Canadian public did not support the concept of burying nuclear waste.

When the federal review began in 1988, AECL was undecided about many aspects of their proposal. The wastes were to be buried in caverns 500 to 1,000 feet below the surface, in titanium or copper cylinders. The same containers would be used for transportation and burial, or a specialized container would be designed for burial. The waste may or may not be reprocessed before burial. By the end of the eight-year public process, they were still undecided, even introducing a new design on their final day of technical presentations.

Despite the many uncertainties, AECL was constant in one thing: they wanted to bury the radioactive wastes in northern Ontario.

Ontario Power Generation, Ontario's provincial electric power utility, has generated more than 90% of the nuclear fuel waste in Canada. Then operating as Ontario Hydro, they did the research and presentations related to transportation and much of the research and presentation related to siting during the federal review of the AECL concept, as well as funding parts of the AECL research program. In the opening days of the hearing, Ontario Hydro proposed that they become the "implementing organization" for the AECL concept. With Ontario Power Generation now occupying four of the six seats in the industry controlled Nuclear Waste Management Organization, it appears that their wishes have come true. OPG pays the bills and runs the show.



International Situation

The nuclear industry in Canada is fond of describing what it calls an "international consensus" around nuclear waste. The consensus, they claim, is that the best option for the long-term management of nuclear waste is to "dispose" of it by burying it deep underground. But where is that happening? Nowhere! Finland and Sweden have plans to do so, and have identified sites and have filed license applications, but the Swedish review has been underway for more than a decade, but the environmental assessment process stalled in 2012 when the proposal was returned to the company for additional work, and again in 2018, and the license has still not been issued (late 2025). Germany has put plans on hold and is now talking "storage". The U.S. cancelled plans to bury high level waste in Nevada, and have started over, with plans to set up a new organization to search for a "storage" site. A new plan was announced early in 2010 for 'shallow storage' in Scotland, but a site has not been identified and certainly has not been accepted. In Canada, plans are still "conceptual", including plans for transportation, waste transfer methods, and emplacement.