Nuclear waste is a problem. The nuclear industry is offering false solutions.

Near Surface Disposal Facility

The Canadian Nuclear Safety Commission (CNSC) recently approved a construction license for a massive radioactive waste mound at the Chalk River Laboratories, an 80-year-old federal nuclear research facility 180 km north-west of Ottawa. The giant mound is known as the 'Near Surface Disposal Facility' or "NSDF."

The site is less than one km from the Ottawa River. The NSDF site was chosen for proximity to leaking waste sites and contaminated buildings at Chalk River. It is on the side of a hill, next to wetlands that drain into the Ottawa River less than one kilometre away.

The enormous mound would hold one million tons of radioactive and other hazardous waste. The NSDF would be seven storeys in height and cover an area the size of 70 NHL hockey rinks. Waste destined for the mound has accumulated over eight decades of operation at Chalk River; waste is also being shipped from other federal nuclear sites for disposal in the mound.

Burying Uncertainty – Deep Geological Repositories for Nuclear Waste

For the last decade, an organization of nuclear power companies called the Nuclear Waste Management Organization (NWMO) has been carrying out a siting process to identify a location for a "deep geological repository" (DGR) in which they intend eventually to abandon all of Canada's stockpiles of high-level radioactive wastes, created by using nuclear power to produce electricity.

Rather than a solution, the NWMO "concept" of a deep geological repository will expand the nuclear footprint and create new risks and uncertainties for generations far into the future.

There will be radioactive releases from the NWMO's operation, including from the processing plant at the DGR site and from the DGR itself. The repository tunnels and emplacement rooms will be too radioactive to allow workers to be present, but the air from deep underground will be released to the surface unfiltered.

Waste will be transported to the site for more than 50 years. The NWMO's reference plan includes 2-3 trucks per day and/or by rail hauling the highly radioactive waste from the reactor stations to the DGR site for 50 years or longer. Each shipment will release low levels of radiation and an accident could result in much higher releases. There is no safe level of exposure to radiation.

Residents downstream and along the transportation route are being shut out of the NWMO's selection process, despite the NWMO saying they will not proceed without an "informed and willing host". The two involved municipalities have not committed to an accountable method for measuring "willingness".

There is no other operating deep geological repository for high-level radioactive fuel waste anywhere in the world. When this experiment fails, the downstream waters are at risk, including drinking water sources

The mound would contain dozens of radioactive and hazardous materials and hundreds of tonnes of heavy metals. Radioactive materials destined for the dump include tritium, carbon-14, strontium-90, four types of plutonium (one of the most dangerous radioactive materials if inhaled or ingested), and up to 6.3 tonnes of uranium.

Algonquin First Nations and the Assembly of First Nations are opposed to the NSDF. The people of the Algonquin Nation have lived in the Ottawa River watershed since time immemorial. The *United Nations Declaration on the Rights of Indigenous Peoples* states that "no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent."

Drinking water for millions of Canadians is threatened by the dump. The NSDF would drain into the Ottawa River, which is the drinking water source for millions of Canadians downstream. The mound is expected to leak during filling and after closure of the facility. A wastewater plant would discharge contaminated water containing large quantities of tritium (radioactive hydrogen) and smaller quantities of many other radioactive substances such as plutonium.

There is no safe level of exposure to the radiation and radioactive substances that would be released from the Chalk River mound to the Ottawa River, or from any waste repository into groundwater and surface water, or from an underground repository or processing facility into the air in the form of radioactive gases or emitted from a passing truck carrying radioactive waste.

Small Modular Reactors Would Produce Novel and Dangerous Radioactive Waste

If built and operated, SMRs would generate far more waste (of all types) per unit of electricity generated than current reactor types. High-level waste cannot be fully recycled In SMRs, despite claims of nuclear industry lobbyists. In certain types of SMRs the volume of high-level radioactive waste with long life could be reduced, but the volume and complexity of low and intermediate-level waste and used nuclear fuel could be substantially increased.

Fuel waste from SMRs such as molten salt reactors would require technically challenging and expensive processing prior to long-term storage or disposal. Fuel waste from sodium cooled SMRs would be complex and reactive because sodium is corrosive and can ignite easily on contact with air. This places an additional burden on waste storage, packaging, and proposed geologic disposal.

The Canadian Nuclear Safety Commission (CNSC) does not consider waste in its reviews of SMR prototypes. Waste could be considered in subsequent licensing processes, but without considering how waste varies with reactor design. The CNSC may even allow SMRs to be abandoned in place ("in-situ decommissioning") if their removal is not "practicable".

Canada's 2020 Review of Radioactive Waste Policy Left the Nuclear Industry in Charge of Radioactive Waste

In November 2020 Natural Resources Canada launched a review of Canada's Radioactive Waste Policy. Hundreds of Canadians and Canadian civil society organizations participated in a series of roundtable discussions with Natural Resources Canada and thousands submitted comments. In February 2022 Natural Resources Canada released a draft of their radioactive waste policy. Thousands of comments were received by the April deadline. In April 2022 a national collaborative of public interest groups released "An Alternative Policy for Canada on Radioactive Waste Management and Decommissioning."

In March 2023 the Government of Canada's policy was released. Civil society organizations expressed profound disappointment, calling the policy a handover to the nuclear industry that failed to meet international standards or the public's expectations.

The policy fails to establish a national registry of waste and its characteristics and its cross-border movement, fails to assert federal authority over radioactive waste management strategies, and fails to require the perpetual care of reactor fuel waste, all essential elements identified during the review.

The policy is practically silent on the crucial issue of reprocessing, saying that while there is currently no reprocessing undertaken in Canada, if there should be reprocessing undertaken in the future the policy would extend to address the wastes from reprocessing.

In October 2023 the federal Minister of Natural Resources, Jonathan Wilkinson, endorsed the Nuclear Waste Management Organization's "strategy" for the long term management of intermediate and low level radioactive waste. Civil society organizations have vigorously opposed the nuclear industry being given the lead in developing a national radioactive waste management strategy, and had fully expected the Minister to engage with Canadians and Indigenous people in his review of the draft strategy submitted to him by the NWMO in June, consistent with commitments that a previous minister made in 2020. He did not. Instead, he unilaterally endorsed the nuclear industry's strategy.

For more information visit nuclearwaste.ca for links to Nuclear Waste Watch, Concerned Citizens of Renfrew County and Area, Northwatch, and We the Nuclear Free North.