

FURTHER THOUGHTS ON GENTILLY-1

Deconstructing the regulation of nuclear waste

A Supplementary Submission by

The Canadian Coalition for Nuclear Responsibility (CCNR)

to

The Canadian Nuclear Safety Commission (CNSC)

September 28, 2026

LIST OF ACRONYMS

AECL	Atomic Energy of Canada Limited, a crown corporation wholly owned by the Government of Canada. AECL owns two major research centres (at Chalk River, Ontario, and Pinawa, Manitoba) and a handful of nuclear reactors, including the 250 MWe Gentilly-1 power reactor in Quebec.
CNL	Canadian Nuclear Laboratories, a private contractor owned and managed by a consortium of US-based multinational corporations. Hired by AECL in 2015 to manage all federally-owned nuclear facilities and radioactive wastes in Canada, CNL is paid billion of dollars of taxpayers' money for its services.
CNSC	The Canadian Nuclear Safety Commission is Canada's nuclear regulator. It is responsible to the Minister of Natural Resources, heading up the government agency whose job it is to promote nuclear power & uranium mining in Canada.
CCNR	The Canadian Coalition for Nuclear Responsibility, a not-for-profit organization federally incorporated 1978. It is dedicated to research and education on all matters related to nuclear energy, whether civilian or military.
NWMO	The Nuclear Waste Management Organization is a not-for-profit organization owned and operated by the nuclear waste producing utilities in Canada, with a mandate to find a willing host community for the permanent underground storage of all of Canada's high-level nuclear waste (in the form of used nuclear fuel).
CANDU	Short for "Canadian Deuterium Uranium", the CANDU is a distinctly Canadian nuclear reactor design using natural (unenriched) uranium as fuel and deuterium oxide – commonly known as heavy water – as a moderator. Instead of one large "pressure vessel" as used in most other commercial reactors, the CANDU employs hundreds of individual "pressure tubes".

Further thoughts on Gentilly-1 by CCNR

Canadian Nuclear Laboratories (CNL) is currently seeking a licence amendment for the Gentilly-1 Waste Facility that will provide authorization for the complete dismantlement of the most radioactive portion – the core area – of the Gentilly-1 nuclear reactor and the removal of all structures and associated wastes from the Gentilly-1 site.

The Gentilly-1 reactor is a federally-owned 250 MWe Boiling Water CANDU reactor. It was shut down in the mid-1980s after a very disappointing performance record (with only 183 days of operation). The defunct reactor is located at Bécancour, Québec, across the St. Lawrence River from Trois-Rivières.

CNL is the current licence-holder for the Gentilly-1 Waste Facility. That licence was issued in 2014 and transferred to CNL in 2018; it expires in 2034. The licence allows for “Storage with Surveillance”. That licence condition “which began in 1985 ... was expected to last for 51 years until 2035,” according to a [Procedural Direction](#) posted by CNSC on August 28 2026.

The current licence does not authorize the dismantling of the most radioactive portion of the Gentilly-1 nuclear power reactor, namely the core area of the reactor, nor the removal of all surface and underground structures on the site. CNL is not only asking CNSC for these additional authorizations to be granted now, but also for CNSC to extend the term of the G1WF licence to 2041 – tacking an extra seven years onto the licence term, extending it significantly beyond the presently mandated 2034 expiry date.

CNSC has apparently decided that CNL’s application for a licence amendment would not warrant a full in-person Commission hearing but can be more “expeditiously” settled through a “hearing in writing” – whereby concerned parties are invited to submit written interventions and CNSC will then decide the issue based on those written submissions. The deadline for written interventions to be filed with the CNSC was June 17, 2026.

Virtually all of the intervenors, including CCNR, asked CNSC to hold a genuine face-to-face public hearing before a panel of Commissioners – as is the usual practice in dealing with

licencing decisions of substance and of particular public interest – instead of a mere “hearing in writing”, which seemed to relegate the CNL amendment request to a low level of significance in the eyes of the CNSC. These requests were ignored or [explicitly denied](#).

On the other hand, CCNR (along with other intervenors) regards the licence amendment requested by CNL as a precedent-setting event of major importance for the future of radioactive waste management in Canada, for the following reasons:

- 1) As of 2026, no nuclear power reactor in Canada has ever been completely dismantled. In fact, worldwide, only a handful of power reactors have been fully demolished to date. There are already 25 power reactors in Canada that will have to be dismantled at some time in the future and so the detailed procedures used in dismantling the Gentilly-1 reactor will be ground-breaking precedents.
- 2) Demolition is a messy business. In a paper published in 1984 by the Canadian Nuclear Society on the proposed dismantling of the Gentilly-1 core, underwater cutting techniques were recommended to limit radiation exposure to workers and to prevent the spreading of radioactive dust off-site. There is little to no consideration in CNL’s application of radioactive effluent control into the St. Lawrence River or radioactive dust dispersal into the local environment, and no discussion at all of subsoil radioactive contamination or groundwater radioactivity measurements.
- 3) Large volumes of radioactively contaminated metal and concrete, as well as highly radioactive ion-exchange resins and other radioactive debris, both liquid and solid, will have to be removed from the Gentilly-1 site. That will entail considerable traffic – many hundreds of truckloads of radioactive debris travelling on Quebec and Ontario highways, crossing bridges and passing through numerous municipalities.
- 4) In the process of waste characterization, CNL will undoubtedly seek permission to treat significant volumes of low-level radioactive waste as “below clearance levels” and therefore able to be discarded in Quebec garbage dumps, landfills and scrapyards as if they were completely non-radioactive. If certain hard-to-measure internal emitters such as calcium-41 (half-life of 99,400 years), chlorine-36 (half-life of 301,000 years), or carbon-14 (half-life of 5,700 years) are overlooked, those “non-radioactive” Quebec waste dumps may end up leaking radioactive contamination into the environment for centuries or millennia.
- 5) The European Nuclear Energy Agency, of which Canada is a member, spent over eight years on the RK&M Project (officially known as the initiative on the Preservation of Records, Knowledge and Memory [RK&M] Across Generations). This initiative has to do with the moral necessity of providing detailed information on the radioactive legacy wastes that we are leaving our distant descendants to deal with in the remote future. There is no indication in the CNL application that such a commitment – to

inform or instruct future generations on the precise nature of the Gentilly-1 radioactive debris – is any part of the CNL dismantling plan.

These are not minor considerations. They all cry out for a full public hearing. They are in fact central to the legal mandate of the Nuclear Safety and Control Act (NSCA). The CNSC is mandated by law [to prevent unreasonable risks to the environment, and to the health and safety of persons](#), that may be associated with the development, production, possession or use of nuclear energy. One would hope that that clause includes unreasonable risks to future generations and to the future environment. It is well understood that one of the most important risks from nuclear energy to humans and to the environment is the possibility of large scale dispersal of radioactive waste materials into the environment of living things, potentially contaminating the food we eat, the water we drink, the air we breathe, or the land we live on. Such considerations are central to the legal mandate of the CNSC.

Intervenors feel there is no urgency for dismantling the core of the Gentilly-1 reactor. They have given many reasons not to grant the licence amendment asked for by CNL through a “hearing in writing” as requested. Indeed, why should CNSC countenance the needless production of large volumes of radioactive debris, much of it intermediate level waste, when there is at present no permanent facility to receive such waste? Does it make sense to move the waste twice rather than once? Is that not both more costly and more risky?

Has CNL offered any rationale at all, whether based on the public interest or not, for moving ahead with the plan to dismantle the Gentilly-1 reactor core at this time? Why is it considered necessary to begin this undertaking in 2026 rather than in 2035 as originally planned? Does CNL have another agenda in mind? Is there something else CNL wants to accomplish that depends on clearing the Gentilly-1 site? No such rationale has been provided. Yet CNSC seems eager to accommodate the wishes of the licensee and wrap up the permitting process rather quickly.

On June 2, 2026, two weeks before the June 17 deadline for written submissions, CNL received permission from the CNSC to [keep three safety-related documents dealing directly with the proposed dismantling of the Gentilly-1 core out of the public domain altogether](#), with only a summary description of the contents to be made available. Not even a redacted version of these three documents are to be made public. They are

- (1) Preliminary Hazard Analysis for the Gentilly-1 Waste Facility;
- (2) Bounding Accident Analysis for the Phase 3 Decommissioning of Gentilly-1
- (3) Safety Analysis Report for the Gentilly-1 Waste Facility.

This CNSC decision is not helpful to intervenors and it seems to be contraindicated by the Nuclear Safety and Control Act, given the CNSC's legal obligation "[to disseminate objective scientific information](#)" on safety matters and "the effects, on the environment and on the health and safety of persons" of any licensed activity.

It is a puzzling question: how is that CNSC regards CNL's request for a licence extension so inconsequential that it does not merit a regular public licencing hearing before a panel of Commissioners, yet it regards the subject matter related to the safety of the operation so sensitive that CNL is completely justified (and fully supported by CNSC) in keeping its own internal hazard analysis, accident analysis, and safety report about Gentilly-1 secret?

In addition to gaining new authorizations, CNL wants to extend the licence by an extra seven years. Such a license extension , all by itself, would normally be cause for a regular face-to-face public hearing before a panel of Commissioners. So why is CNSC seeking to expedite the wishes of CNL rather than being guided by the combined wishes of intervenors to hold a regular CNSC public licencing hearing for this licence amendment request from CNL? According to the NSCA (Nuclear Safety and Control Act), the CNSC owes its primary responsibility to the public, and not to the industry. Or are we wrong about that?

Recommendation 1: CCNR urges the CNSC not to grant the CNL request for a licence amendment for the Gentilly-1 Waste Facility (G1WF) at this time. In seven years, when the existing licence nears its end, CNSC can hold a regular public hearing on the licence renewal for the Gentilly-1 Waste Facility. At that time all of the legitimate concerns over the proposed dismantling of the first nuclear power reactor core in Canada, and the consequent packaging, transportation, and storage of the radioactive waste associated with that operation (including the "clearance" of low-level radioactive waste for disposal in existing non-radioactive waste facilities) can be given the attention that they deserve. That will include careful waste characterization and RK&M documentation for present and future generations.

CCNR recognizes that while CNSC may or may not be legally required to hold a regular face-to-face hearing instead of a hearing in writing, they do have a great deal of flexibility. As stated in the CNSC's August 28 [Procedural Direction](#),

“The [Canadian Nuclear Safety Commission Rules of Procedure 10](#) (the Rules) provide the Commission with flexibility to manage its proceedings in a manner that reflects the circumstances of each matter and consideration of fairness. In particular: Subrule 3(1) of the Rules provides that the Commission may vary or supplement the Rules in order to ensure that a proceeding is dealt with as informally and expeditiously as the circumstances and considerations of fairness permit.”

CCNR respectfully submits that when there is no pressing need for the dismantling of the core of the Gentilly-1 reactor to proceed before 2035, and no rationale has been offered by the applicant in that regard, there is no need for CNSC to feel constrained to proceed “informally and expeditiously”. Is it a matter of fairness, for example, to totally prohibit public access to the proponent's own hazard analysis, accident analysis and safety report related to the Gentilly-1 dismantlement?

Indeed, given the disproportionate resources of the applicant and the intervenors, “consideration of fairness” might weigh more heavily on the side of the intervenors than otherwise. That is particularly so with Kabaowek First Nation (KFN).

KFN is one of several Algonquin communities on whose unceded traditional territory the Chalk River Nuclear Laboratories were established during World War 2, when a [Combined Policy Committee in Washington DC](#) decided (April 1944) to allow Canada to build a plutonium-producing nuclear reactor in Canada. The Canadian Government chose a sacred Algonquin site beside the Ottawa River (known to the Algonquins as the Kichi-Sibi or “Great River”) for the new reactor and associated laboratories. They did so without consulting or even notifying the Algonquins.

The first reactor on the Chalk River site started up on September 5 1945, barely one month after the atomic bombing of Hiroshima on August 6, 1945. Throughout the ensuing 20 years, [Canada sold plutonium](#) produced at Chalk River to the American military for use in their nuclear weapons program. Revenues from those sales helped to defray the costs of Canada's civilian nuclear research at Chalk River.

Since 2015, Chalk River Laboratories and all other federally-owned nuclear facilities – including Gentilly-1 – have been managed by a private contractor by the name of Canadian Nuclear Laboratories (CNL). CNL is currently owned and operated by a consortium of US-based multinational corporations.

Fast forward to January 2024, when CNSC granted a licence to CNL to construct a permanent waste dump at Chalk River, called the Near Surface Disposal Facility (NSDF), just one kilometre from Kichi-Sibi. This facility – essentially an engineered earthen mound similar to a landfill – is intended to hold up to a million tonnes of low level radioactive wastes and other toxic materials in perpetuity. KFN launched two judicial reviews related to this licencing decision based on (1) CNL’s failure to adequately consult the Indigenous land owners, and (2) the Government of Canada’s failure to adequately protect species at risk.

One year later, in January 2025, a federal judge upheld KFN’s first contention and ruled that both CNL and CNSC had failed to fully take into account the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) during their consultation process. According to UNDRIP, there shall be no storage or disposal of toxic materials on Indigenous lands without the free, prior, and informed consent of the Indigenous land holders. (Incidentally, in January 2026, a federal judge also upheld KFN’s second contention that protection of species at risk at the Chalk River site were not adequately considered in siting the NSDF.)

Meanwhile, in the first half of 2025, CNL surreptitiously moved all of the high-level radioactive waste from the Gentilly-1 site to Chalk River, without any consultation or notification involving KFN and without any formal hearing of any kind. Despite the fact that CNL’s current licence for the Gentilly-1 Waste Facility allows only “Storage with Surveillance”, CNSC interprets this seemingly crystal-clear condition to allow for the relocation of radioactive waste to a different facility operating under a different licence.

To the best of our knowledge, there has been no clarification from CNSC as to how there can be a complete change of licence governing the Gentilly-1 high-level waste without any hearing of any kind, not even a hearing-in-writing. In 2024, the G1 high-level waste was governed by the terms of the G1WF licence, yet by the fall of 2025, that same waste material was presumably governed by the terms of the Chalk River licence – a completely

different licence with entirely different conditions. One wonders, who was the licensee when the waste was en route over highways and bridges and when it was passing through municipalities? Was there any consultation with or notification to those municipalities?

Fast forward to August 6, 2026 – the 81st anniversary of the Hiroshima bomb. On that day [Kebaowek First Nation wrote to CNSC](#) asking “that the Commission postpone the G-1 licence amendment hearing until such a time that the informational and consultation gaps are remedied and Kebaowek is provided a meaningful opportunity to engage in the process, including with respect to the assessment of the project's potential impacts to our rights in accordance with our own laws. It is not our preference nor preferred approach to engage with the matters raised in your correspondence and that of CNSC Staff by way of letter correspondence...”.

Perhaps in view of the federal court judgment of January 2025, CNSC responded to this letter from KFN by reopening the hearing-in-writing process regarding CNL’s request for a licence amendment for the Gentilly-1 Waste Facility. On August 28, 2026, CNSC issued a [Procedural Direction](#) allowing an extra month for intervenors to submit further written comments with a deadline of 3 pm, September 28, 2026. This supplementary submission from CCNR will be sent to CNSC by the deadline, with one additional recommendation.

Recommendation 2: CCNR supports the Kebaowek First Nation in calling for a postponement of the licence amendment hearing for the Gentilly-1 Waste Facility, preferably until the current G1WF licence expires. In addition, CCNR urges CNSC to require CNL to store all the intermediate level waste from dismantling the core of the Gentilly-1 reactor onsite until a national facility for the long-term storage of such waste has been constructed by the Nuclear Waste Management Organization. Onsite storage has been the practice in Canada for managing refurbishment wastes that are similar in many respects to decommissioning wastes. CCNR also urges CNSC to require temporary onsite storage for decommissioning waste deemed suitable for clearance, pending confirmation from the Quebec government experts that such waste may be safely sent to local dumps, landfills or scrapyards.

CNSC has created a panel of one person, Commissioner Marcel Lacroix, to receive all supplementary submissions filed from intervenors before the September 28 deadline. Presumably, this panel of one person will also render judgment on whether or not CNSC will approve the CNL licence amendment request. Dr. Lacroix holds a doctorate in nuclear physics from École Polytechnique in Montreal. His is the only signature on several CNSC

documents, including (a) CNSC's refusal to have a regular face-to-face public hearing in lieu of a hearing-in-writing, (b) CNSC's decision to allow CNL to keep three safety-related documents on Gentilly-1 completely confidential, and (c) CNSC's Procedural Direction establishing the new deadline for September 28 and announcing the panel of one.

Dr. Lacroix has clearly played a major, perhaps even a dominant role in regulatory decisions related to Gentilly-1. Not only that, but Dr. Lacroix was the only commissioner besides Rumina Velshi (then CNSC president), to sign the CNSC final licencing decision giving the go-ahead for the construction of the Chalk River NSDF by CNL.

This delegation of responsibility on the part of CNSC to one Commissioner is disappointing to CCNR. Is it to be seen as yet another indication of the relative lack of importance that CNSC attaches to this dossier? CCNR regrets that the Commission has not provided a more diversified and balanced panel, since there are numerous multidisciplinary and even trans-scientific aspects to the issue at hand that go far beyond nuclear physics. Sound judgments are best achieved, we believe, through a multiplicity of viewpoints.

It is clear that nuclear fission technology poses unique radiological challenges. On the one hand it brings to the surface large quantities of naturally occurring radioactive materials (such as uranium, thorium, and their radioactive progeny). But it also creates vast inventories of human-made radioactive waste materials – unwanted byproducts of nuclear reactors. Indeed, a great many radioactive elements are newly created by nuclear fission. There are hundreds of fission products (such as cesium-137, strontium-90 and iodine-129), dozens of transuranic actinides (such as plutonium, americium and curium isotopes), and a multitude of neutron activation products (such as cobalt-60, nickel-59, niobium-94 and chlorine-36).

The most challenging nuclear legacy in terms of sheer radioactive potency is the high-level radioactive waste, in the form of irradiated nuclear fuel. The Nuclear Waste Management Organization (NWMO) acknowledges that these wastes remain dangerously radiotoxic for at least a million years. The Ontario Royal Commission on Electric Power Planning documented back in 1978 that the [radiotoxicity of high-level waste](#) remains formidable even after ten million years.

The next most challenging nuclear legacy is the intermediate-level waste that arises from the irradiated and contaminated structural components of a nuclear reactor. Some of these items become highly radioactive as a result of neutron activation (such as pressure tubes, calandria tubes, calandria vessels, and thermal shields). Some other items experience chronic radioactive contamination with fission products, transuranic actinides and activated corrosion products (e.g. ion-exchange resins, feeder pipes, the “tube bundles” of steam generators, and more). The largest volume of intermediate level waste arises from the dismantling of the core areas and the primary cooling circuit of a nuclear power reactor. Some of them are hazardous as internal emitters but difficult to measure.

With a few exceptions, these post-fission radionuclides were never found in nature prior to 1939 – the year when nuclear fission was discovered. They are all known carcinogens and mutagens. Once created, non-fissile radionuclides are for all practical purposes indestructible other than through the natural process of radioactive disintegration. Some of these human-made radionuclides are very long-lived and must be isolated from the environment of living things for millennia, thus constituting a toxic radioactive legacy for future generations. Our descendants need to be aware of these risks and need to know how to deal with them if and when present day containment technologies fail.

Some long-lived post-fission radionuclides

Name	Half-Life	Where
Iodine-129	15.7 million years	Used fuel, HTS
Cesium-135	2.3 million years	Used fuel, HTS
Technetium-99	210,000 years	Used fuel, HTS
Calcium-41	99,400 years	Irradiated concrete
Chlorine-36	301,000 years	Concrete, Graphite, etc
Nickel-59	76,000 years	Irradiated steel
Carbon-14	5,700 years	Heavy water, IX resins
Niobium-94	20,400 years	Irradiated Zircalloy
Transuranics	Various	Used fuel, HTS

For most Canadians, the Age of Nuclear Waste is just beginning. Although nuclear waste in Canada has been accumulating for more than 80 years, the most problematic varieties have mostly been located in areas remote from major population centres (e.g. 230 million tonnes of radioactive mill tailings from uranium mining operations) or has been stored onsite, close to the nuclear facilities where the high-level and intermediate-level waste was

produced (e.g. used nuclear fuel, refurbishment waste). Only recently has that waste been transported routinely away from the sites where the waste was first produced, with the object of securing the waste for the very long term and eventually abandoning it. In fact, CNSC anticipates issuing “licences to abandon” these wastes at some future time. At that point the waste ceases to be an industry liability or a regulatory responsibility and becomes a long-term radioactive legacy of the nuclear age.

CCNR has long maintained that the regulation of nuclear waste for the very long term presents unique challenges that go far beyond the usual licencing responsibilities of the CNSC. In the licensing of operating facilities, licensees are inherently invested in nuclear safety because worker protection and asset valuation are important motivators. However the same cannot be assumed to be the case when it comes to the very long term management of nuclear wastes. The industry is motivated to save money where possible and to limit its own financial and temporal liability to the maximum degree that is consistent with CNSC regulations. In such cases it is extremely important that the Canadian public and Indigenous communities be made an integral part of the regulatory process because the waste will ultimately become the responsibility of society as a whole and not just those transient organizations that currently constitute the nuclear industry and regulatory regime. What may be considered a relative minor matter for the industry is, of necessity, a major matter for present and future generations of Canadians. And so it must be for the CNSC, we believe, in keeping with its legal mandate to protect the health and safety of people and the environment.

This submission has been prepared by Gordon Edwards, Ph.D., president of the Canadian Coalition for Nuclear Responsibility, and submitted to the CNSC on September 28, 2026.

It is supplementary to the original submission that was filed on June 17, 2026:
www.ccnr.org/G1_CCNR_CNSC_2026.pdf