

Comments on REGDOC-2.11.1: Management of Radioactive Waste, Volume I

Concerned Citizens of Renfrew County and Area (CCRCA) wishes to provide feedback on comments submitted by the nuclear industry on draft REGDOC-2.11.1: Management of Radioactive Waste, Volume I. This feedback applies to comments from Bruce Power, the Canadian Nuclear Association, Canadian Nuclear Laboratories (CNL), Ontario Power Generation, New Brunswick Power and the Nuclear Waste Management Organization.

CCRCA notes that it is not the role of the Canadian Nuclear Safety Commission (CNSC) to create policy. The *Radioactive Waste Policy Framework* states that “federal government has the responsibility to develop policy.” The CNSC’s role is to implement policy, and to regulate the nuclear industry so as to protect workers, the public and the environment. With regard to radioactive waste, this should include assessment of future impacts of radioactive waste on the health and safety of persons and the environment, so as to avoid imposing an undue burden on future generations.

CCRCA feels that it is important to provide detailed feedback on the nuclear industry comments, because most of them would weaken the REGDOC. As a civil society group concerned about health, the environment and future generations, we ask the CNSC to resist their incorporation in the REGDOC.

1.1 Purpose

The nuclear industry suggests adding “Requirements and guidance will vary depending on the level of radioactive waste being managed and the facility type, such as storage and disposal facilities, using a graded approach commensurate with their relative risks.”

Requirements and guidance should not “vary” for different facilities and waste types. While recognizing that waste storage and disposal are different activities, there should be an overarching requirement to contain and isolate nuclear wastes, so as to protect human health and the environment from the effects of ionizing radiation and other toxic hazards. Our group recommends that a statement to this effect be included in section 1.1. Further, we do not support inclusion of a reference to “graded approach” in the purpose statement, noting that REGDOC-3.5.3, *Regulatory Fundamentals*, uses this phrase in the context of enforcement action, rather than in a more general sense.

We are concerned that the second bullet in Section 1.1 delegates the development of standards to the nuclear industry via the CSA Group. Standards should not be developed by industry, but should be developed and approved by the nuclear regulator, as in other OECD countries.

1.2 Scope

The nuclear industry suggests amending the first sentence to read “The requirements and guidance in this document pertain to CNSC-licensed ~~facilities and~~ activities that are required to have a waste management program.” The nuclear industry justifies this by stating that “Section 24 of the NSCA, says activities are licensed, not facilities.” In our view this is a misreading of the *Nuclear Safety and Control Act*. CNSC does license facilities. Waste management requirements must apply to facilities as well as activities. The current wording should be retained.

2. The CNSC’s Policy and Guiding Principles for the Management of Radioactive Waste

The first paragraph of Section 2 begins “Under Canada’s Radioactive Waste Policy Framework [4], waste owners are required to ensure the safe and secure management of radioactive waste and to make arrangements for its

long-term management.” The nuclear industry suggests adding another sentence to differentiate between a ‘waste generator’ and a ‘waste owner.’

The *Radioactive Waste Policy Framework* does not create distinct responsibilities for waste generators and waste owners, and does not provide for transfer of waste “ownership” responsibilities. The *Framework* says that both producers and owners are responsible for “management and operation of disposal and other facilities required for their wastes.”

More fundamentally, CNSC does not set policy for the management of radioactive waste. Policy setting is the responsibility of the Government of Canada. The CNSC implements policy. The heading and first paragraph of this section should accurately reflect the federal government’s role, and not attempt to recast or duplicate it.

3. Background

In the second paragraph of section 3, the nuclear industry suggests deleting the entire first sentence (“All nuclear substances associated with licensed activities will eventually become radioactive waste.”), noting that “some substances may simply decay away to the point the waste is no longer radioactive waste.” Deleting the word “radioactive” from the sentence to read “All nuclear substances associated with licensed activities will eventually become radioactive waste” would address this, while retaining an important point.

4. General Requirements

The nuclear industry proposes to delete the phrase “avoid imposing an undue burden on future generations.” The nuclear industry says that this requirement “is not part of the federal policy on radioactive waste management.” However, not imposing an undue burden on future generations is broader federal policy, enshrined in the government’s sustainable development strategy. It defines sustainable development as not “compromising the ability of future generations to meet their own needs.” This requirement is central to responsible management of radioactive waste. It is troubling that the nuclear industry, including the Nuclear Waste Management Organization, seeks to be exempted from this requirement.

The nuclear industry wishes to change the phrase “develop and implement the documentation (programs, procedures, instructions, etc.) required to ensure the safety of all waste management activities” so as to “not place the emphasis on the documentation.” Documentation is clearly of critical importance in long-term radioactive waste management. The nuclear industry’s rationale for its proposed change is unconvincing and it should be rejected.

5. Waste Management Program

The nuclear industry suggests deleting three bullets that it claims are covered by CSA Group standards referenced in Licence Conditions Handbooks. Specifically, it wants to delete language requiring that a “waste management program shall identify the waste management activities undertaken... [and] clearly state requirements, criteria and objectives to be met, and safety standards to be used.” Omitting this information from a waste management program would create a lack of transparency and would disadvantage the public.

6.1 Waste classification

The nuclear industry proposes to weaken the following requirement by adding “Where appropriate”:

“The licensee shall implement a radioactive waste classification system. [Where appropriate,] The classification system shall be based on the specific safety case and safety assessment required for the waste management facility or activity.”

Waste classification has been the source of much confusion and controversy with regard to recent proposed disposal facilities for the federal government’s radioactive wastes. Classifying radioactive waste and managing different classes of radioactive waste are matters of great public interest. These matters should be addressed by federal radioactive waste policies. The Government of Canada should flesh out policies that can be reflected in regulations under the *Nuclear Safety and Control Act* and in REGDOCs prepared by the CNSC. For the regulator to attempt to develop policies for these matters independent of the Government of Canada is inappropriate. This creates an appearance that key aspects of policy (such as waste classification) are being delegated to licensees, which would be highly inappropriate.

Radioactive waste classification must not be facility-specific. A radioactive waste classification system should be developed that is applicable to all waste management facilities and activities.

Section 6.1 has already been weakened by use of the word “generally” in five places. We suggest that all these occurrences of “generally” be removed. But the nuclear industry proposes to further weaken the language, e.g., with the following change in the fourth bullet related to intermediate-level waste (ILW):

“Due to its long-lived radionuclides, ILW generally may requires a higher level of containment and isolation than can be provided in near surface repositories.

The nuclear industry’s rationale for this suggestion is that “There are current plans to place ILW in aboveground mounds.” This would appear to refer to CNL’s “Near Surface Disposal Facility” (NSDF) proposal.

This reference to plans to place intermediate-level waste in aboveground mounds (such as the NSDF) illustrates the confusion and controversy generated by radioactive waste classification. On October 27, 2017, CNL announced the decision to include only low-level radioactive waste in the NSDF. The Canadian Environmental Assessment Registry for the NSDF project includes a public notice to this effect.

On the other hand, we agree with the nuclear industry that worker handling considerations (a 2 mSv/hr contact dose limit) could be included in the definition of ILW (in addition to a reference to long-lived radionuclides). We also suggest including the following information from the ILW definition in the *IAEA Safety Glossary*:

Terminology Used in Nuclear Safety and Radiation Protection, 2018 Edition:

- Intermediate level waste may contain long lived radionuclides, in particular, alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon.
- Waste in this class may therefore require disposal at greater (intermediate) depths, of the order of tens of metres to a few hundred metres or more.

The issues of waste classification and definitions of waste types require further work and clarification before this REGDOC can be finalized. The Government of Canada, which has the responsibility to develop policy under the *Radioactive Waste Policy Framework*, should provide guidance on this matter.

6.2 Waste characterization

The nuclear industry suggests amending the statement that “The licensee shall perform waste characterization at the various steps in the management of radioactive waste” by changing “various” to “appropriate”. Further, after the statement “Waste characterization shall include assessing the physical, mechanical, chemical, biological, thermal and/or radiological properties of the waste material, as applicable,” the nuclear industry suggests deleting the sentence “The licensee must justify to the CNSC the aspects that do not apply.”

If a licensee feels there are aspects of waste characterization that “do not apply”, it should justify this to the CNSC. Radioactive waste characterization and retention of records are of vital importance owing to hazards associated with the various steps in waste management. For example, transport of radioactive waste is a key management step. Inadequate waste characterization prior to transport can create both short-term transport accident risks and long-term risks associated with subsequent storage and disposal.

The nuclear industry provides no justification for its suggestion to delete “detailed” from the sentence “The licensee shall maintain ~~detailed~~ records of the characterization performed.” Indeed, CNSC should prioritize the development of requirements for detailing waste characterization records.

6.3 Waste acceptance criteria

The nuclear industry suggests that Section 6.3 be deleted and its contents moved to sections 9 (on waste storage) and 10 (on waste disposal), arguing that waste acceptance criteria are “only applicable to Waste Storage Facilities, or Waste Disposal Facilities.” This suggestion should be rejected. Waste acceptance criteria are applicable to other steps in waste management, notably processing and transport.

This section states that “The licensee shall develop waste acceptance criteria, consistent with and derived from the safety case and safety assessment.” It follows that a safety case and safety assessment for waste management activities should be finalized prior to the development of waste acceptance criteria. Further, the safety case and safety assessment should be made available for independent review and should be approved by the regulator. Waste acceptance criteria should be developed as a subsequent step. These should also be made available for review and approved by the regulator. This sequence of steps should be clarified in the REGDOC.

7.1 Generation

The first sentence in the second paragraph (“The licensee shall, as far as practicable, minimize the generation of radioactive waste”) is already weakened by the inclusion of the phrase “as far as practicable”. The phrase “as far as practicable” is unnecessary and should be removed.

The nuclear industry suggests weakening the following sentence as well (“The licensee shall consider the waste hierarchy in the management of radioactive waste...”) by changing “shall” to “should” and by inserting “where practicable”. The nuclear industry’s suggestions to weaken this section should be rejected.

We further suggest that the term “waste hierarchy” be clarified. Presumably this means that a licensee should consider the specific characteristics of different waste classes (i.e., low-, intermediate- and high-level) in making management decisions. This is clearly good practice. The nuclear industry fails to provide a clear justification for resisting this.

7.4 Transport

The content of this section is limited to a single sentence that reads “The licensee shall transport radioactive waste in accordance with the *Packaging and Transport of Nuclear Substances Regulations, 2015.*” These *Regulations* lack any content specific to transport of radioactive waste. Radioactive waste can include a complex mixture of radionuclides with highly variable properties, and its transport is a controversial and potentially dangerous activity.

This section should state that Part 2 of the *Transportation of Dangerous Goods Regulations* applies to transport of radioactive waste, including section 2.2, Responsibility for Classification. This section says "Before allowing a carrier to take possession of dangerous goods for transport, the consignor must determine the classification of the dangerous goods in accordance with this Part." Section 2.2 says that for radioactive materials the consignor must use the "classification determined in accordance with the *“Packaging and Transport of Nuclear Substances Regulations”*." However, the *Packaging and Transport of Nuclear Substances Regulations* have no provisions specific to packaging, transport or classification of radioactive waste *per se*. This creates uncertainty as to how radioactive wastes should be classified for transport.

Improper classification of radioactive waste shipments could cause serious problems in the event of a transport accident. If shipments contain quantities of alpha and beta emitters, these may not trigger radiation alarms but would nonetheless create health risks to emergency responders inhaling radioactive dust or gases released in a fire. Absence of policy or regulations specific to radioactive waste transport is a serious matter that requires urgent attention from the Government of Canada. The issue of radioactive waste transport will require further work before this REGDOC can be finalized.

7.6 Disposal

This section states that “The licensee shall dispose of radioactive waste safely, in a manner that provides for the protection of people and the environment, and in accordance with regulatory requirements.” However, given that there are no radioactive waste regulations under the NSCA, and limited federal policy specific to radioactive waste disposal, the issue of radioactive waste disposal needs further work before this REGDOC is finalized.

8. Waste Packages

This section states that “The licensee shall engineer waste packages so that the radioactive waste is contained in accordance with applicable regulations...” As noted above, there are no regulations at present specific to packaging of radioactive waste to ensure containment. Further elaboration of the topic of waste packaging for waste transport, storage and disposal is needed. Requirements regarding the application of the *Packaging and Transport of Nuclear Substances Regulations* to radioactive waste should be included in the REGDOC.

9.3 Design of waste management storage facility

This section states that “The licensee shall design the storage facility to fulfill the fundamental applicable safety functions during normal operation, anticipated operational occurrences, design basis accidents and design

extension conditions...” The nuclear industry suggests modifying this sentence so that it does not apply to existing facilities (by adding the word “new” before “storage facility”) and by deleting language after “safety function” (including references to “design basis accidents” and “design extension conditions”).

These suggestions would greatly weaken this section and should be rejected. Design of radioactive waste storage facilities, including for high-level waste irradiated fuel, is a major public concern. Accidents in these facilities have could have widespread and serious public health impacts. Further elaboration of the topic of accidents in both radioactive waste storage and disposal facilities is needed.

9.5 Operation of a waste management storage facility

With regard to maintaining, testing and inspecting a waste management storage facility, the nuclear industry suggests deleting the following: “at a frequency that ensures that the reliability of the equipment remains high and that the effectiveness of the systems remain in accordance with the design intent for the facility.” This proposed deletion is not justified, and this language should be retained.

10. Waste Management Disposal Facility

The nuclear industry suggests “adding wording to clearly enable a graded approach to be applied based on waste type.” We do not support a reference to “graded approach”. REGDOC-3.5.3, *Regulatory Fundamentals*, uses this phrase in the context of enforcement action, rather than in a more general sense.

10.2 Site characterization for a waste management disposal facility

The nuclear industry does not provide a clear rationale for its suggestion to remove the second paragraph in this section related to deep geological repositories. This suggestion should be rejected. We also recommend that this section be generalized to address siting of geological repositories for management of low- and intermediate-level waste, given that the term “deep” may not apply to them. More generally, this section should address siting of all types of disposal facilities, including near surface disposal facilities.

10.3 Design of a waste management disposal facility

While this section states that “The licensee shall design the disposal facility to facilitate the inspection, monitoring, testing, and maintenance of the facility and the host environment, as applicable,” it does not address waste retrieval in the event that monitoring indicates a loss of containment. Given the problems experienced with waste disposal facilities in other countries, this topic should be addressed. This comment also applies to section 10.7, “Monitoring and surveillance of a waste management disposal facility.”

10.7 Monitoring and surveillance of a waste management disposal facility

In this section the nuclear industry suggests changing the wording “revocation of the licence” to “removal from CNSC licensing”. We suggest including a reference to “application for a licence to abandon” for consistency with section 26 of the *Nuclear Safety and Control Act*.

10.8 Post-closure period of a waste management disposal facility

The nuclear industry does not provide an adequate justification for its suggestion to remove the note on “active controls”. This suggestion should be rejected.