



Waste Management  
**Waste Management, Volume I:  
Management of Radioactive Waste**

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## **Waste Management, Volume I: Management of Radioactive Waste**

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## Preface

This regulatory document is part of the CNSC's waste management series of regulatory documents, which also covers decommissioning. The full list of regulatory document series is included at the end of this document and can also be found on the [CNSC's website](#).

Regulatory document REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*, sets out requirements and guidance for managing radioactive waste.

An overview of Canada's national framework for radioactive waste management is provided in REGDOC-2.11, *Framework for Radioactive Waste Management and Decommissioning in Canada*.

For information on the implementation of regulatory documents and on the graded approach, see REGDOC-3.5.3, *Regulatory Fundamentals*.

The words "shall" and "must" are used to express requirements to be satisfied by the licensee or licence applicant. "Should" is used to express guidance or that which is advised. "May" is used to express an option or that which is advised or permissible within the limits of this regulatory document. "Can" is used to express possibility or capability.

Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.

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## Management of Radioactive Waste

### 1. Introduction

#### 1.1 Purpose

The purpose of this document is to provide requirements and guidance:

- on radioactive waste management applicable to different types of CNSC licensees
- related to CSA Group standards applicable to radioactive waste management
- supplemental to specific topics in radioactive waste management standards

#### 1.2 Scope

The requirements and guidance in this document pertain to CNSC-licensed facilities and activities that are required to have a waste management program. All licensees that have a waste management program are subject to the requirements in sections 4, 5, 6, 7 and 8 of this regulatory document.

In addition to the above requirements, waste management storage facilities and disposal facilities are subject to the requirements in sections 9 and 10, respectively.

Licensees who do not have waste management program requirements may wish to consult this document for information.

This document elaborates on the requirements contained in CSA N292.0, *General principles for the management of radioactive waste and irradiated fuel* [1]. Furthermore, this regulatory document is complemented by other [CNSC regulatory documents](#), such as REGDOC-3.2.1, *Public Information and Disclosure* [2], and REGDOC-3.2.2, *Aboriginal Engagement* [3].

#### 1.3 Relevant legislation

The following provisions of the *Nuclear Safety and Control Act* (NSCA) and the regulations made under it are relevant to this document:

- section 26 of the [NSCA](#)
- paragraphs 12(1)(a), 17(b), subsection 3(1) and section 4 of the [General Nuclear Safety and Control Regulations](#)
- paragraphs 3(k), 4(e), 5(f), 5(i), 5(j), 5(k), 6(c), 6(d), 6(h), 6(i), 6(j), 6(n) and sections 7 and 8 of the [Class I Nuclear Facilities Regulations](#)
- paragraphs 4(t), 5(i) and 5(k) of the [Class II Nuclear Facilities Regulations](#)
- paragraphs 3(a), 3(c), 3(d), 8(b) and section 7 of the [Uranium Mines and Mills Regulations](#)

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

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. REGDOC-2.11, *Framework for Radioactive Waste Management and*

*Decommissioning in Canada* [5], describes the national framework and the philosophy underlying the CNSC's approaches to regulating the management of radioactive waste.

## 2.1 The CNSC's waste management framework

In addition to this regulatory document, the CNSC's regulatory framework for waste management includes:

- REGDOC-2.11, *Framework for Radioactive Waste Management and Decommissioning in Canada*
- REGDOC-2.11.1, *Waste Management, Volume II: Management of Uranium Mine Waste Rock and Mill Tailings*
- REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for Long-term Radioactive Waste Management* (under revision)
- G-219, *Decommissioning Planning for Licensed Activities* (under revision)

The following CSA standards complement the CNSC's regulatory framework:

- N292.0, *General principles for the management of radioactive waste and irradiated fuel*
- N292.1, *Wet storage of irradiated fuel and other radioactive materials*
- N292.2, *Interim dry storage of irradiated fuel*
- N292.3, *Management of low- and intermediate-level radioactive waste*
- N292.5, *Guideline for the exemption or clearance from regulatory control of materials that contain, or potentially contain, nuclear substances*
- N292.6, *Long-term management of radioactive waste and irradiated fuel*

## 3. Background

Radioactive waste in Canada is defined as any material (liquid, gaseous, or solid) that contains a radioactive nuclear substance, as defined in section 2 of the NSCA, for which no further use is foreseen. In addition to containing nuclear substances, radioactive waste may also contain hazardous substances, that are not radioactive, as defined in section 1 of the *General Nuclear Safety and Control Regulations*.

All nuclear substances associated with licensed activities will eventually become radioactive waste. Therefore, the safe management of that waste is considered during all steps of its management. The steps involved in the management of radioactive waste can include:

- generation and control
- handling, which may comprise
  - collecting
  - sorting
  - segregating
  - packaging
  - loading
  - transferring
- processing, which may comprise
  - pre-treatment
  - treatment

- conditioning
- storage
- transport
- disposal

#### **4. General Requirements**

All licensees who manage radioactive waste shall:

- manage radioactive waste so as to avoid imposing an undue burden on future generations, by finding safe, practicable and environmentally acceptable solutions for the long-term management of radioactive waste
- be responsible for its safe management, taking into consideration the health and safety of persons, the environment and national security
- produce and/or maintain records of each of the steps in the management of radioactive waste for which they are responsible
- take into account interdependencies among all steps in radioactive waste management. The different steps in the management of radioactive waste shall be evaluated both as an individual step in the process and as part of an integrated waste management process
- develop and implement the documentation (programs, procedures, instructions, etc.) required to ensure the safety of all waste management activities for which they are responsible. The programs and procedures necessary to ensure safety shall be commensurate with the scale of the licensed facility or activity and the inventory
- track the waste inventory under their control
- use operational experience, lessons learned from other similar facilities or activities, and advances in science and technology in an effort to continuously improve the safety of the waste management facility or activity
- provide the CNSC with information about the ownership of radioactive waste in their possession

#### **5. Waste Management Program**

The licensee shall develop and implement a waste management program to control the management of radioactive waste where it is generated, handled, processed, stored, transported or disposed of.

The waste management program shall:

- identify the waste management activities undertaken
- clearly state requirements, criteria and objectives to be met, and safety standards to be used
- establish an organizational structure that specifies the roles and responsibilities for all positions with respect to radioactive waste management
- outline the management system aspects that assure the effectiveness of the waste management program
- address all waste streams associated with or potentially contaminated by nuclear substances
- consider the waste hierarchy

In addition, the licensee shall develop and implement associated programs and procedures specific to waste management as part of the waste management program. The associated



programs and procedures should be commensurate with the hazard of the waste streams being managed. For more information on managing programs consult REGDOC-2.1.1, *Management System* [6], and CSA N286, *Management system requirements for nuclear facilities* [7].

## 6. Radioactive Waste Classification, Waste Characterization and Waste Acceptance Criteria

### 6.1 Waste classification

The licensee shall implement a radioactive waste classification system. The classification system shall be based on the specific safety case and safety assessment required for the waste management facility or activity.

Waste should be classified according to the degree of containment and isolation required to ensure safety with consideration given to the hazard potential of different types of waste and the timeframe associated with the hazard.

In Canada, there are four main classes of radioactive waste recognized:

- Low-level radioactive waste (LLW) contains material with radionuclide content above established clearance levels and exemption quantities (set out in the *Nuclear Substances and Radiation Devices Regulations*), but generally has limited amounts of long-lived activity. LLW requires isolation and containment for periods of up to a few hundred years. An engineered near surface disposal facility is typically appropriate for LLW.  
LLW includes the following sub-classes:
  - Very-low-level radioactive waste (VLLW) has a low hazard potential and is above the criteria for clearance and exemption levels. Long-term waste management facilities for VLLW do not need a high degree of containment or isolation. Concentrations of longer lived radionuclides in VLLW are generally very limited. A near surface repository is generally suitable for the disposal of VLLW.
  - Very-short-lived low-level radioactive waste (VSLLW) is waste that can be stored for a decay period of not more than a few years and subsequently cleared for release. VSLLW includes radioactive waste containing only short half-life radionuclides typically used for research and biomedical purposes. The main criterion for VSLLW is the half-life of the predominant nuclides. In general, the management of VSLLW should only be applied to radionuclides with a half-life of 100 days or less.
- Intermediate-level radioactive waste (ILW) generally contains long-lived radionuclides in concentrations that require isolation and containment for periods greater than several hundred years. ILW needs no provision, or only limited provision, for heat dissipation during its storage and disposal. Due to its long-lived radionuclides, ILW generally requires a higher level of containment and isolation than can be provided in near surface repositories. Waste in this class may require disposal at greater intermediate depths of the order of tens of metres to a few hundred metres or more.
- High-level radioactive waste (HLW) is used nuclear fuel that has been declared as radioactive waste and/or is waste that generates significant heat via radioactive decay. HLW typically has levels of activity concentration in the range of  $10^4$  to  $10^6$  TBq/m<sup>3</sup>. HLW is associated with penetrating radiation thus shielding is required. HLW also contains significant quantities of long-lived radionuclides necessitating long-term isolation. Placement in deep, stable

geological formations at depths of several hundred metres or more below the surface is recommended for the long-term management of HLW.

- Uranium mine and mill tailings are a specific type of radioactive waste generated during the mining and milling of uranium ore and the production of uranium concentrate. In addition to tailings, mining activities typically result in the production of large quantities of waste rock as workings are excavated to access the ore body. The wastes contain long-lived activity that does not decrease significantly over extended time periods. In general, long-term management in near-surface facilities adjacent to mines and mills is the only practical option for these wastes, given the large volumes of waste generated in mining and milling operations. Further information can be found in REGDOC-2.11.1, *Waste Management Volume II: Management of Uranium Mine Waste Rock and Mill Tailings* [8].

## 6.2 Waste characterization

The licensee shall perform waste characterization at the various steps in the management of radioactive waste. Waste characterization shall include assessing the physical, mechanical, chemical, biological, thermal and/or radiological properties of the waste material, as applicable. The licensee must justify to the CNSC the aspects that do not apply. The licensee shall maintain detailed records of the characterization performed.

## 6.3 Waste acceptance criteria

The licensee shall develop waste acceptance criteria, consistent with and derived from the safety case and safety assessment. The waste acceptance criteria shall specify the chemical, physical, radiological, mechanical, biological and other characteristics of waste, waste forms, packages and unpackaged waste that will be accepted for handling, processing, storage, transport and/or disposal at the facility or place of the activity.

In situations where acceptance requirements for disposal are not yet available, the licensee should develop waste acceptance criteria with reasonable assumptions about the anticipated disposal option.

# 7. Steps in the Management of Radioactive Waste

## 7.1 Generation

The licensee shall consider measures to control the generation of radioactive waste in terms of both volume and radioactivity content before the commencement of licensed activities, beginning at the design phase and continuing throughout the lifetime of the facility.

The licensee shall, as far as practicable, minimize the generation of radioactive waste. The licensee shall consider the waste hierarchy in the management of radioactive waste, including: prevent generation, reduce volume and radioactivity content, reuse and recycling of materials and components, and disposal.

The clearance of some materials from regulatory control after they have been appropriately processed and/or stored for a sufficiently long period of time, together with reuse and recycling of material, can be effective in reducing the amount of radioactive waste that needs further processing or storage. The limits and controls for clearance from regulatory control are found in the *Nuclear Substances and Radiation Devices Regulations*.

## 7.2 Handling

For the selected waste handling methods, the licensee shall take into account:

- the characteristics of the waste
- the types of containment systems and packages
- the minimization of radiological risks in accordance with the ALARA principle

## 7.3 Processing

The licensee shall take into consideration the characteristics of the waste and of the demands imposed by the different steps in its management when selecting waste processing methods.

The licensee should consider early processing of waste to convert it to a passively safe form or to otherwise stabilize it. The licensee should reduce the hazard potential of the waste as far as reasonably achievable at each stage of waste processing.

The licensee should segregate sealed sources from other waste because of the different regulatory requirements that apply. The licensee should keep spent or disused sealed sources in a shielded container during handling. The licensee shall not subject spent or disused sealed sources to compaction, shredding or incineration in order to ensure their integrity. If the integrity of a sealed source has been compromised, the licensee shall no longer treat it as a sealed source. Further information on sealed sources can be found in REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material* [9].

## 7.4 Transport

The licensee shall transport radioactive waste in accordance with the *Packaging and Transport of Nuclear Substances Regulations, 2015*.

## 7.5 Storage

The licensee shall store radioactive waste safely, in a manner that provides for the protection of people and the environment, and in accordance with regulatory requirements.

The licensee shall conduct storage activities in accordance with its documented procedures. The licensee shall consider the impact of any modification to these activities on the safety of the stored waste.

The licensee shall store the waste in a manner that can be inspected, monitored, retrieved and preserved in a condition suitable for its subsequent management.

Further information on storage is found in section 9, Waste Management Storage Facility, for criteria applicable to the storage of radioactive waste.

### Decay storage

The licensee should segregate radioactive waste designated for decay storage from other waste, from the point of generation to its final disposal.

## 7.6 Disposal

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.

Further information on disposal is found in section 10, Waste Management Disposal Facility, for criteria applicable to the disposal of radioactive waste.

## 8. Waste Packages

The licensee shall engineer waste packages so that the radioactive waste is contained in accordance with applicable regulations, both during normal operation and in accident conditions of its intended use in the handling, processing, storage, disposal, and, if applicable, the transport of waste.

The licensee shall ensure that waste packages and unpackaged waste accepted for processing, storage and/or disposal conform to the waste acceptance criteria for the licensed facility or activity.

## 9. Waste Management Storage Facility

### 9.1 General requirements for a waste management storage facility

The licensee shall develop, implement, and maintain a safety case and supporting safety assessment for the entire lifecycle of a waste management storage facility. Draft REGDOC-2.4.4, *Safety Analysis for Class 1B Facilities* [10], provides requirements and guidance on the safety analysis for a waste management storage facility.

For long-term waste management storage facilities, draft REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for Long-term Radioactive Waste Management* [11], provides requirements and guidance for licensees and applicants in developing the safety case and supporting safety assessment for the long-term management of radioactive waste.

### 9.2 Site characterization for a waste management storage facility

The licensee shall characterize the site at a level of detail sufficient to support an understanding of the current site characteristics and how the site is anticipated to evolve over the duration of the facility's lifecycle.

### 9.3 Design of waste management storage facility

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, as follows:

- control of sub-criticality
- removal of heat
- radiation shielding
- confinement of radioactive material
- retrievability

The licensee shall identify and classify structures, systems and components (SSC) important to safety. Passive SSCs should be considered before active SSCs. For active SSCs, consideration should be given to: the reliability of the SSCs, any need for redundancy and diversity, and the behaviour of the SSCs in the event of incidents or accidents.

The licensee shall design the waste management storage facility to facilitate the inspection, monitoring, testing, and maintenance of the SSCs and waste packages stored in the facility to the extent that they are important for ensuring safety.

The licensee should ensure that process system controls (e.g., waste handling, equipment and ventilation systems) are independent of protection systems. If this is not feasible, detailed justification should be provided for the use of shared and interrelated systems.

#### **9.4 Construction and commissioning of a waste management storage facility**

The licensee shall construct the waste management storage facility in accordance with the design.

The licensee shall ensure that any changes to design during construction are subject to change control.

The licensee shall verify that the equipment or SSCs perform as per design. Upon the completion of commissioning, the licensee shall produce a final commissioning report. The report shall document: the as-built status of the facility; the testing conducted with evidence to support the successful completion of the testing; and, any modifications made to the facility or to procedures during construction. The report shall provide assurance that all the conditions of authorization have been satisfied.

#### **9.5 Operation of a waste management storage facility**

The licensee shall establish and document operational limits and conditions derived from safety assessments in order to maintain the facility in a safe state.

The licensee shall operate the radioactive waste management storage facility in accordance with documented procedures. Procedures should be developed for managing and operating a waste management facility under normal conditions, incidents and postulated accident conditions. The licensee should consider the impact of any modification to the operations on the safety of the stored waste.

The licensee shall monitor the operational limits and conditions and should revise them, as necessary, for any of the following reasons:

- in the light of operating experience
- following modifications made to the facility and/or to the type of radioactive waste stored
- as part of the process of periodically reviewing the safety case and supporting safety assessment for the facility
- in case of relevant changes in legal or regulatory conditions

The licensee should maintain, test and inspect the facility 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.

## **9.6 Decommissioning of a waste management storage facility**

The licensee shall carry out the decommissioning of the waste management storage facility in accordance with G-219, *Decommissioning Planning for Licensed Activities* [12].

# **10. Waste Management Disposal Facility**

## **10.1 General requirements for a waste management disposal facility**

The licensee shall develop, implement, and maintain a safety case and supporting safety assessment for the entire lifecycle of a waste management disposal facility.

The licensee shall ensure that each of the steps in the lifecycle of a disposal facility is supported, as necessary, by evaluations of the site, of the options for design, construction, operation and closure, and of the performance and safety of the disposal system.

The licensee shall ensure the safety of the facility by providing multiple safety functions including the use of multiple barriers and controls such as the host environment, the engineered barriers, and safe facility operation and closure.

The licensee should ensure that the step by step approach to the development of a disposal facility allows opportunities for independent technical review, regulatory review, decision making and public involvement at all stages.

The licensee shall site, design, construct, commission, operate and close the disposal facility in such a way that safety is ensured by passive means to the fullest extent possible and the need for actions to be taken after closure of the facility is minimized. The licensee shall identify and classify SSCs.

For long-term waste management disposal facilities, draft REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for Long-term Radioactive Waste Management* [11], provides requirements and guidance for licensees and applicants in developing the safety case and supporting safety assessment for the long-term management of radioactive waste.

## **10.2 Site characterization for a waste management disposal facility**

The licensee shall characterize the selected site at a level of detail sufficient to support a general understanding of the current site characteristics and how the site is anticipated to evolve over time.

The CNSC's guidance for licence applicants on technical aspects that may be considered during the site characterization stage of the siting process for a deep geological repository (DGR) for radioactive waste is found in draft REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization* [12].

## **10.3 Design of a waste management disposal facility**

The licensee shall design the waste management disposal facility that provides for both operational and post-closure safety.

The licensee shall design the facility and its engineered barriers to provide safety during the construction and operational period. The licensee shall also postulate disruptive event scenarios.

The licensee shall base the design of a disposal facility upon:

- expected performance of the facility to protect the health and safety of persons and the environment for time periods that account for the time of maximum effect, or for a time period to be justified by the applicant
- characteristics and inventory of the radioactive material to be emplaced
- characteristics of the local and regional environment
- the development of waste acceptance criteria for the radioactive material to be emplaced
- the safety assessment developed for the facility that reflects the chosen waste acceptance criteria

The licensee shall ensure that the design of a disposal facility:

- allows for the containment and isolation of the radioactive waste or irradiated fuel to be emplaced
- uses multiple barriers (defence in depth)
- uses approved engineering practices and principles, and engineering change control processes
- allows for the safe emplacement of radioactive material into the facility
- allows for condition assessment inspections of safety-significant SSCs prior to closure
- considers off-gas generated by the radioactive material over time
- allows for the measurement of water in safety-significant SSCs prior to closure
- allows for maintenance activities of SSCs

The licensee shall identify and classify SSCs important to safety.

The licensee shall design the disposal facility and its engineered barriers to contain the waste with its associated hazards, to be physically and chemically compatible with the host geological formation and/or surface environment, and to provide safety features after closure that compliment those features afforded by the host environment.

The licensee shall design the disposal facility to facilitate the inspection, monitoring, testing, and maintenance of the facility and the host environment, as applicable. The licensee must justify to the CNSC the aspects that do not apply.

The licensee shall consider closure in the initial design of the facility and plans for closure have to be updated as the design of the facility is developed.

#### **10.4 Construction and commissioning of a waste management disposal facility**

The licensee shall construct the disposal facility in accordance with its design. The licensee shall have sufficient evidence that the closure design will function as intended before construction activities commence.

The licensee should avoid or limit disturbances to the host environment during construction. The licensee should perform all construction activities so that containment and isolation features of the host environment are preserved. The licensee shall ensure that any changes to design during construction or disturbances to the host environment are subject to change control.

The licensee shall verify that the equipment meets design requirements and perform validation activities to demonstrate that the equipment and SSCs perform as expected in support of operations. The licensee shall produce a final commissioning report upon completion of commissioning. The report shall document: the as-built status of the facility; the testing conducted with evidence to support the successful completion of the testing; and, any modifications made to the facility or to procedures during construction. The report shall provide assurance that all the conditions of authorization have been satisfied.

### **10.5 Operation of a waste management disposal facility**

The licensee shall establish and document operational limits and conditions in order to maintain the facility in a safe state.

The licensee shall operate the radioactive waste management disposal facility based on documented procedures. The licensee should consider the impact of any modification to the operations on the safety of the emplaced waste.

The licensee shall monitor the operational limits and conditions which should be revised, as necessary, for any of the following reasons:

- in the light of operating experience
- following modifications made to the facility and/or to the type of radioactive waste emplaced
- as part of the process of periodically reviewing the safety case and supporting safety assessment for the facility
- in case of relevant changes in the legal or regulatory conditions

The licensee shall maintain, test and inspect the facility at a frequency that ensures that the reliability of equipment remains high and that the effectiveness of systems remains in accordance with the design intent for the facility.

The licensee shall establish an aging management plan to provide for the timely detection and mitigation of the aging effects to ensure integrity and functional capacity of the SSCs throughout all stages of its life cycle.

Further information on operational aspects during the pre-closure period is provided in draft REGDOC-2.4.4, *Safety Analysis for Class IB Nuclear Facilities* [10].

### **10.6 Decommissioning of a waste management disposal facility**

The licensee shall carry out the decommissioning of the support facilities in accordance with G-219, *Decommissioning Planning for Licensed Activities* [12].

The licensee shall close the disposal facility in a way that maintains the integrity of those safety functions that have been shown to be important after closure. The licensee shall ensure that plans for closure including the transition from active management of the facility are well defined and practicable so that closure can be carried out safely.



### **10.7 Monitoring and surveillance of a waste management disposal facility**

The licensee shall develop a monitoring and surveillance program for a waste management disposal facility. The monitoring and surveillance program shall:

- demonstrate compliance with regulatory requirements and with licence conditions
- verify that the disposal system is performing as expected
- verify that the key assumptions made and models used to assess safety are consistent with actual conditions
- maintain records of the information on the disposal facility, the site and its surroundings

The licensee shall perform surveillance and ensure the protection and preservation of passive safety features.

After closure and until revocation of the licence, the licensee shall remain responsible for surveillance of the disposal system and for any remedial action that might be required.

### **10.8 Post-closure period of a waste management disposal facility**

The licensee shall prepare plans to address the period following closure.

The CNSC expects the following actions to be taken during the institutional control period:

- implementation of a visual inspection plan for periodic examination of the site to look for signs of deterioration of the facility (e.g., slumping of the ground) or erosion of the surface
- operation and maintenance of a monitoring system to provide early warning of the release of radionuclides before they leave the site boundary
- implementation of active controls to prevent unrestricted access to the site

Note that active controls include periodic inspections and surveillance, controlled access, limited usage and minor maintenance. Active controls may be followed eventually by passive controls, which will ensure that knowledge of the disposal site is maintained and that future uses of the site are controlled.

## Glossary

For definitions of terms used in this document, see [REGDOC-3.6, \*Glossary of CNSC Terminology\*](#), which includes terms and definitions used in the [Nuclear Safety and Control Act](#) and the regulations made under it, and in CNSC regulatory documents and other publications. REGDOC-3.6 is provided for reference and information.

The following are new terms that are being defined in this draft for public consultation. Following public consultation, the final versions of the terms and definitions will be submitted for inclusion in the next version of REGDOC-3.6.

### **Radioactive waste**

Any material (liquid, gaseous, or solid) that contains a radioactive nuclear substance, as defined in section 2 of the NSCA, for which no further use is foreseen. In addition to containing nuclear substances, radioactive waste may also contain non-radioactive hazardous substances, as defined in section 1 of the *General Nuclear Safety and Control Regulations*.

## References

The CNSC may include references to information on best practices and standards such as those published by CSA Group. With permission of the publisher, CSA Group, all nuclear-related CSA standards may be viewed at no cost through the CNSC Web page “[How to gain free access to all nuclear-related CSA standards](#)”.

1. CSA Group. [CSA N292.0, General principles for the management of radioactive waste and irradiated fuel](#). Canada, 2014.
2. CNSC. [REGDOC-3.2.1, Public Information and Disclosure](#). Ottawa, 2018.
3. CNSC. [REGDOC-3.2.2, Aboriginal Engagement](#). Ottawa, 2016.
4. Natural Resources Canada. [Radioactive Waste Policy Framework](#).
5. CNSC. [REGDOC-2.11, Framework for Radioactive Waste Management and Decommissioning in Canada](#). Ottawa, 2018.
6. CNSC. [REGDOC-2.1.1, Management System](#). Ottawa, 2019.
7. CSA Group. [CSA N286, Management system requirements for nuclear facilities](#). Mississauga, 2012.
8. CNSC. [REGDOC-2.11.1, Waste Management Volume II: Management of Uranium Mine Waste Rock and Mill Tailings](#). Ottawa, 2018.
9. CNSC. [REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material, Version 2](#). Ottawa, 2019.
10. CNSC. [REGDOC-2.4.4, Safety Analysis for Class IB Nuclear Facilities](#). Ottawa, 2019.
11. CNSC. [REGDOC-2.11.1, Waste Management, Volume III: Safety Case for Long-Term Radioactive Waste Management](#). Ottawa, 2018.
12. CNSC. [G-219, Decommissioning Planning for Licensed Activities](#). Ottawa, 2000.
13. CNSC. [REGDOC-1.2.1, Guidance on Deep Geological Repository Site Characterization](#). Ottawa, 2019.

## Additional Information

The CNSC may recommend additional information on best practices and standards such as those published by CSA Group. With permission of the publisher, CSA Group, all nuclear-related CSA standards may be viewed at no cost through the CNSC webpage "[How to gain free access to all nuclear-related CSA standards](#)".

The following documents are not referenced in this regulatory document but contain information that may be useful to the reader:

- CSA Group. [CSA N292.1, Wet storage of irradiated fuel and other radioactive materials](#). Mississauga, 2016.
- CSA Group. [CSA N292.2, Interim dry storage of irradiated fuel](#). Mississauga, 2013.
- CSA Group. [CSA N292.3, Management of low- and intermediate-level radioactive waste](#). Mississauga, 2008.
- CSA Group. [CSA N292.5, Guideline for the exemption or clearance from regulatory control of materials that contain, or potentially contain, nuclear substances](#). Mississauga, 2011.
- CSA Group. [CSA N292.6, Long-term management of radioactive waste and irradiated fuel](#). Mississauga, 2018.
- International Atomic Energy Agency (IAEA). General Safety Requirements GSR-Part 5, [Predisposal Management of Radioactive Waste](#). Vienna, 2009.
- IAEA. IAEA General Safety Guide GSG-1, [Classification of Radioactive Waste](#). Vienna, 2009.
- IAEA. IAEA Specific Safety Requirements SSR-5, [Disposal of Radioactive Waste](#). Vienna, 2011.
- IAEA. IAEA Specific Safety Guide SSG-40, [Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors](#). Vienna, 2016.
- IAEA. IAEA Safety Guide WS-G-6.1, [Storage of Radioactive Waste](#). Vienna, 2006.
- IAEA. IAEA Safety Guide SSG-14, [Geological Disposal Facilities for Radioactive Waste](#). Vienna, 2011.
- IAEA. IAEA Safety Guide SSG-23, [The Safety Case and Safety Assessment for the Disposal of Radioactive Waste](#). Vienna, 2012.
- IAEA. IAEA Safety Guide SSG-29, [Near Surface Disposal Facilities for Radioactive Waste](#). Vienna, 2014.
- IAEA. IAEA Safety Guide SSG-31, [Monitoring and Surveillance of Radioactive Waste Disposal Facilities](#). Vienna, 2014.

## CNSC Regulatory Document Series

Facilities and activities within the nuclear sector in Canada are regulated by the CNSC. In addition to the *Nuclear Safety and Control Act* and associated regulations, these facilities and activities may also be required to comply with other regulatory instruments such as regulatory documents or standards.

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|        | 1.2 | Class IB facilities                      |
|        | 1.3 | Uranium mines and mills                  |
|        | 1.4 | Class II facilities                      |
|        | 1.5 | Certification of prescribed equipment    |
|        | 1.6 | Nuclear substances and radiation devices |

### 2.0 Safety and control areas

- |        |      |  |
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|        | 2.2  | Human performance management             |
|        | 2.3  | Operating performance                    |
|        | 2.4  | Safety analysis                          |
|        | 2.5  | Physical design                          |
|        | 2.6  | Fitness for service                      |
|        | 2.7  | Radiation protection                     |
|        | 2.8  | Conventional health and safety           |
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|        | 2.10 | Emergency management and fire protection |
|        | 2.11 | Waste management                         |
|        | 2.12 | Security                                 |
|        | 2.13 | Safeguards and non-proliferation         |
|        | 2.14 | Packaging and transport                  |

### 3.0 Other regulatory areas

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