
Sent: April 26, 2019 2:13 PM
To: Consultation (CNSC/CCSN)
Subject: Comments on Draft REGDOC-2.11.1, Waste Management, Volume I: Management of Radioactive Waste
comments on REGDOC-2-11-1.docx

Attachments:

Please find attached my comments on draft REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*.

I am submitting these comments to the CNSC as a private citizen.

Regards,

Albert Lee, PhD.

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

No.	Section/Comment	Proposed Change	Category (Major/Clarification)	Impact on Industry
1	<p>1.3 Relevant legislation The list of relevant legislation does not include paragraph 1 of the Nuclear Substances and Radiation Devices Regulations, which provides the definitions for conditional clearance levels and exemption quantities. Section 6.1 in REGDOC-2.11.1 refers to the clearance levels and exemption quantities set out in the Nuclear Substances and Radiation Devices Regulations.</p>	Add paragraph 1 of the Nuclear Substances and Radiation Devices Regulations to the list of relevant legislation.	Clarification	
2	<p>1.3 Relevant legislation The list of relevant legislation does not include the <i>Packaging and Transport of Nuclear Substances Regulations, 2015</i>. However, Section 7.4 in REGDOC-2.11.1 states “The licensee shall transport radioactive waste in accordance with the <i>Packaging and Transport of Nuclear Substances Regulations, 2015</i>.”</p>	Add the <i>Packaging and Transport of Nuclear Substances Regulations, 2015</i> to the list of relevant legislation.	Clarification	
3	<p>2.1 The CNSC’s waste management framework The list of CNSC documents in Section 2.1 that are relevant to waste management is incomplete.</p> <ul style="list-style-type: none"> • Draft REGDOC-2.4.4, Safety Analysis for Class 1B Facilities is included in Sections 9.1 and 10.5, and • Draft REGDOC-1.2.1, Guidance on Deep Geological Repository Site Characterization is included in Section 10.2 	Add REGDOC-2.4.4 and REGDOC-1.2.1 to the list in Section 2.1.	Clarification	

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4	<p>5. Waste Management Program “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].”</p> <p>Separate the requirement from the guidance.</p>	<p>Change to:</p> <p>Requirements</p> <p>“In addition, the licensee shall develop and implement associated programs and procedures specific to waste management as part of the waste management program.”</p> <p>Guidance</p> <p>“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].”</p>	Clarification	
5	<p>6.1 Waste classification “LLW includes the following sub-classes:</p> <ul style="list-style-type: none"> • Very-low-level radioactive waste (VLLW) has a low hazard potential and is above the criteria for clearance and exemption levels ...” <p>It should state “... the criteria for clearance levels and exemption quantities ...”</p>	<p>Change to:</p> <p>“LLW includes the following sub-classes: Very-low-level radioactive waste (VLLW) has a low hazard potential and is above the criteria for clearance levels and exemption quantities ...”</p>	Clarification	

No.	Section/Comment	Proposed Change	Category (Major/Clarification)	Impact on Industry
6	<p>6.1 Waste classification “Waste should be classified according ... n REGDOC-2.11.1, <i>Waste Management Volume II: Management of Uranium Mine Waste Rock and Mill Tailings</i> [8].”</p> <p>The text after the first paragraph in Section 6.1 is stated as guidance.</p>	<p>Change to:</p> <p>Requirements</p> <p>“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.”</p> <p>Guidance</p> <p>“Waste should be classified according ... n REGDOC-2.11.1, <i>Waste Management Volume II: Management of Uranium Mine Waste Rock and Mill Tailings</i> [8].”</p>	Clarification	
7	<p>6.3 Waste acceptance criteria “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.”</p> <p>The above cited paragraph is not stated as a requirement, but a requirement statement is needed. In order to ensure that reasonable consideration has been given to disposal of the wastes, waste acceptance criteria that have a technical basis are required.</p>	<p>Change to:</p> <p>“In situations where acceptance requirements for disposal are not yet available, the licensee shall develop waste acceptance criteria with reasonable assumptions about the anticipated disposal option.”</p>	Major	These waste acceptance criteria could subsequently be used to inform choices for disposal options.

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8	<p>7.1 Generation “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.”</p> <p>The above cited paragraph is informative and should be shown as guidance.</p> <p>Paragraph 5 in the Nuclear Substances and Radiation Devices Regulations refers to exempted activities. It would be better to use the term “exemption” rather than “clearance” in the above cited paragraph.</p> <p>Also, it would be better to change “limits and controls for clearance” to “criteria for exemption”.</p>	<p>Change to:</p> <p>Guidance</p> <p>“The exemption 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 criteria for exemption from regulatory control are found in the Nuclear Substances and Radiation Devices Regulations.”</p>	Clarification	

No.	Section/Comment	Proposed Change	Category (Major/Clarification)	Impact on Industry
9	<p>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.”</p> <p>I suggest adding “in accordance with applicable regulations” to the end of the first sentence.</p> <p>Draft REGDOC-2.4.4 and draft REGDOC-2.11.1, Waste Management Volume III need to be issued either before or at the same time as this REGDOC.</p> <p>The requirement should be separated from the guidance.</p>	<p>Change to:</p> <p>Requirement</p> <p>“The licensee shall develop, implement, and maintain a safety case and supporting safety assessment for the entire lifecycle of a waste management storage facility in accordance with applicable regulations.”</p> <p>Guidance</p> <p>“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, 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.”</p>	Clarification	

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10	<p>9.3 Design of waste management storage facility “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.”</p> <p>It is unclear why the above cited paragraph is written as guidance rather than as a requirement.</p>	<p>Change to:</p> <p>“The licensee shall ensure that process system controls (e.g., waste handling, equipment and ventilation systems) are independent of protection systems to the extent practical. If this is not feasible, detailed justification shall be provided for the use of shared and interrelated systems.”</p>	Major	Independence of process system controls from protection systems is highly desirable to avoid single failures that compromises multiple levels of defence in depth.
11	<p>9.5 Operation of a waste management storage facility “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.”</p> <p>It is unclear why the above cited paragraph is written as guidance rather than as a requirement.</p>	<p>Change to:</p> <p>“The licensee shall 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.”</p>	Major	The reliability of the equipment and the effectiveness of the systems must ensure that the safety case remains valid.

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12	<p>10.1 General requirements for a waste management disposal facility</p> <p>“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.”</p> <p>“For long-term waste management disposal facilities, Draft REGDOC-2.11.1, <i>Waste Management, Volume III: Safety Case for Long-Term Radioactive Waste Management</i> [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.”</p> <p>The above cited paragraphs are stated as guidance.</p> <p>Draft REGDOC-2.11.1, <i>Waste Management Volume III</i> needs to be issued either before or at the same time as this REGDOC.</p>	<p>Change to:</p> <p>Guidance</p> <p>“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.”</p> <p>“For long-term waste management disposal facilities, REGDOC-2.11.1, <i>Waste Management, Volume III: Safety Case for Long-Term Radioactive Waste Management</i> [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.”</p>	Clarification	

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13	<p>10.2 Site characterization for a waste management disposal facility</p> <p>“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].”</p> <p>The above cited paragraphs are stated as guidance.</p> <p>Draft REGDOC-1.2.1 needs to be issued either before or at the same time as this REGDOC.</p>	<p>Change to:</p> <p>Guidance</p> <p>“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 REGDOC-1.2.1, Guidance on Deep Geological Repository Site Characterization [12].”</p>	Clarification	

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14	<p>10.4 Construction and commissioning of a waste management disposal facility “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.”</p> <p>The above cited paragraph contains a requirement in the last sentence and guidance in the first two sentences. These should be separated into two paragraphs under requirements and guidance.</p>	<p>Change to:</p> <p>Requirements</p> <p>“The licensee shall ensure that any changes to design during construction or disturbances to the host environment are subject to change control.”</p> <p>Guidance</p> <p>“The licensee should avoid or limit disturbances to the host environment during construction.</p> <p>The licensee should perform all construction activities so that containment and isolation features of the host environment are preserved.”</p>	Clarification	
15	<p>10.5 Operation of a waste management disposal facility “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].”</p> <p>The above cited paragraph is guidance.</p> <p>Draft REGDOC-2.4.4 needs to be issued either before or at the same time as this REGDOC.</p>	<p>Change to:</p> <p>Guidance</p> <p>“Further information on operational aspects during the pre-closure period is provided in REGDOC-2.4.4, Safety Analysis for Class IB Nuclear Facilities [10].”</p>	Clarification	

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16	<p>10.8 Post-closure period of a waste management disposal facility</p> <p>“The CNSC expects the following actions to be taken during the institutional control period:</p> <ul style="list-style-type: none"> • 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 <p>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.”</p> <p>The above cited paragraphs are stated as guidance.</p>	<p>Change to:</p> <p>Guidance</p> <p>“The CNSC expects the following actions to be taken during the institutional control period:</p> <ul style="list-style-type: none"> • 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 <p>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.”</p>	Clarification	

No.	Section/Comment	Proposed Change	Category (Major/ Clarification)	Impact on Industry
17	<p>Sections 4 to 10.8 Requirements should be indicated before the start of the paragraphs containing requirements, and guidance should be indicated before the paragraphs containing guidance in each section and subsection.</p>		Clarification	