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VIA EMAIL

Mr. Brian Torrie
Director General
Regulatory Policy Directorate
Canadian Nuclear Safety Commission
PO Box 1046, Station B
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Email: cnsc.consultation.ccsn@canada.ca

Dear Mr. Torrie:

Cameco Corporation's Comments on Discussion Paper DIS-16-02, *Radioactive Waste Management and Decommissioning*

Cameco Corporation (Cameco) has prepared the following comments on Discussion Paper DIS-16-02, *Radiation Protection and Dosimetry* (the Discussion Paper).

Chronology of document publication and consultation

The Discussion Paper states that the Canadian Nuclear Safety Commission (CNSC) is proceeding with several of the regulatory amendments to the proposed *Radiation Protection Regulations* (RPR) set out in the CNSC's What We Heard Report for DIS-13-01 (the Report) and that an analysis of these amendments supports the need for two regulatory documents, REGDOC-2.7.1 and REGDOC-2.7.2 (proposed REGDOCs). It is difficult to fully assess the effect of the changes proposed in the Discussion Paper without having had the opportunity to review the proposed amendments to the RPR because the nature and extent of the changes to the regulations will determine the appropriate scope of guidance documents. At this stage, licensees and stakeholders do not know which of the proposed amendments listed in the Report are included or excluded from the proposed amendments analyzed in drafting the Discussion Paper and the anticipated requirements in new regulations, such as dose limits for breastfeeding nuclear energy workers. The following comments are made in this context recognizing that after the RPR have been published, Cameco will be in a position to make more detailed comments during the consultation period following the publication of the draft proposed REGDOCs that we have been advised will take place.

Scope of Proposed REGDOCS

The Discussion Paper states that the purpose of the proposed REGDOCs is to provide guidance for the RPR yet some of the topics for which guidance is proposed relate to matters for which guidance is not needed. For example, Appendix A lists design features, such as shielding, ventilation and dust control as guidance topics when these are not regulated practices and relate to the scientific foundation for radiation protection practices and not to the implementation of radiation protection regulations and, specifically, the RPR.

Another example where it is not certain that additional guidance is needed is radiation dose limits. Except for exceedances of dose limits, it is not clear what guidance could be provided for effective, equivalent and emergency dose limits when these prescriptive limits are specified in the RPR.

The Discussion Paper states that G-129, rev. 1, Keeping Radiation Exposures and Doses "As Low As Reasonably Achievable (ALARA)" could be improved by providing guidance on "the use of dose constraints as an ALARA tool". Cameco is concerned that dose constraints could evolve into a requirement through a REGDOC even though the Report expressly stated in response to this concern that it was unnecessary to regulate dose constraints. Cameco reiterates our previous position that requirements should be left to regulations and licence conditions and REGDOCs should be restricted to guidelines, recommendations or policies. Given the fact that we have seen requirements introduced in other REGDOCs, if dose constraints are included in REGDOC-2.7.1, then Cameco would like REGDOC-2.7.1 to expressly state that dose constraints are not a requirement and simply a possible tool a licensee could consider for use in its radiation protection program.

Consolidation of Guidance Documents

Currently, the suite of guidance documents reflect the different risks and requirements of specific industries and licensees. It is unclear from the Discussion Paper how these differences will be reflected in the consolidated proposed REGDOCs.

Cameco appreciates the advantages to moving to the consolidated guidance model; however, in order to avoid the uncertainty regarding the application of specific chapters to particular licensees or industries, Cameco recommends that each section or chapter include a scope section that lists the licensees or industries to which it applies.

Further, based on Cameco's experience, we see S-106 as uniquely suited to continuing as a standalone document because it is a full code for licensed dosimetry providers and has no application to other licensees or to non-licensed dosimetry providers. We strongly recommend that this document should not be incorporated into the proposed REGDOCs.

Inconsistency or Redundancy with Other Documents

The Discussion Paper states that the proposed REGDOCs will integrate the content of some existing CNSC guidance documents. Inconsistency and/or redundancy would result if documents such as RD/GD-369 and the relevant sections of G-313 continue to apply, and evolve independently from the content included in the proposed REGDOCs.

Cameco suggests that it would be preferable to merely reference the applicable content of source documents that will not become obsolete when the proposed REGDOCs are published.

Further, Cameco believes that training requirements are covered adequately in REGDOC-2.2.2 and it would be redundant to include guidance in the proposed REGDOCs.

Existing Documents: No Changes Necessary
Cameco cannot fully assess changes to the substance of existing guidance documents until the details are disclosed in the proposed REGDOCs. Cameco is, however, satisfied that the following documents are acceptable in their current form and no changes are required:

G-91: It provides clear guidance regarding direct measurement and estimation and it provides reasonable, risk-based flexibility regarding the use of licenced dosimetry services. Based on our review, Cameco does not see any need for clarification or additional guidance for the information in this document.

G-129: It provides good guidance and a framework for an ALARA program. It also provides a rationale health protection professionals can rely on to support the adoption of specific activities in an ALARA program. Based on our review, Cameco does not see a need for additional guidance for the information in this document.

G-218: It provides the flexibility to ensure risk-based practices are promoted through the recognition of site-specific Codes of Practice. It also includes a good summary of action levels and the recommendation that action levels should be linked to effective dose as an indicator of a potential loss of control. Based on our review, Cameco also does not see any need for additional guidance for the information in this document.

Existing Documents: Changes Required
G-228: The description of action levels in this document is inconsistent with the definition of action levels in the RPR where the term is restricted to a level at which there is a potential loss of control. This document also uses a hierarchy of action limits that refer to events in which elevated radiation emissions do not indicate a potential loss of control and can be addressed without taking the actions that would be necessary to respond to a potential loss of control.

Cameco recommends that the content of G-228 should be replaced with the Code of Practice approach used in G-218 so that term action level is reserved for situations in which there is a potential loss of control and the multiple action level approach should be abandoned.

S-106: In Cameco's experience, it has been difficult to establish exposure scenarios for independent testing of the interpretation of bioassay that are relevant to the activities carried on by all CNSC licensees. We have not seen any value to this type of independent testing and we recommend that it not be carried forward into the proposed REGDOCs.

This document also relies on ANSI 13.3-2011, which references a number of old International Commission on Radiological Protection (ICRP) and USA regulatory frameworks that may not be applicable to the Canadian regulatory structure or may be incompatible with modern internal dosimetry models. Cameco strongly recommends that the proposed REGDOCs should not

incorporate external standards by reference and should instead include all the applicable content from them directly without reference to any other documents.

G-147: This document provides useful examples and it promotes a risk-based approach. We note, however, that daily urine, fecal and *in vivo* counting as listed in Table 1 for action levels is not risk-based and such monitoring activities are more appropriately used at dose limits or perhaps for certain materials.

S-260: Cameco supports the CNSC proposal to deal with "mass changes" to dose records and looks forward to having a chance to review the specific details when specific details are available.

Dosimetry

Section 3.1 of the Discussion Paper states that some amendments to the RPR were driven by changes to international benchmarks, including the relatively recent ICRP recommendation to reduce the dose limit to the lens of the eye. Cameco does not support the adoption of this recommendation because the scientific evidence on dose limits to the lens of the eye is inconclusive and the resulting ICRP recommendation is overly conservative for a relatively minor health impact. In addition, the measurement techniques and devices are only now becoming available to reliably assess the dose to the lens of eye at the required level of accuracy implied by the proposed lower dose limits. As such, we believe it is premature to change the applicable regulations or to provide corresponding guidance.

The Discussion Paper section 'Impact of proposed changes' states that the proposed methods for ascertaining dose are generally consistent with methods currently used except that the proposed dosimetry REGDOC will be based on revisions to the ICRP dosimetric and biokinetic models as presented in the ICRP OIR (Occupational Intakes of Radionuclides) series of documents. Industry currently uses software based on the existing ICRP models and, until the new models have been finalized and new software made available, Cameco will not be in a position to implement any changes.

At the workshop held on September 15, 2016, CNSC staff indicated that the use of these new models will be deferred until the publication of the OIR series of documents and Cameco agrees with this approach.

Impact of proposed changes

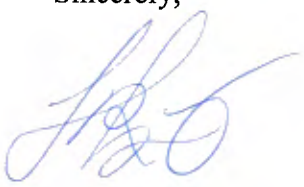
Program and procedure documents will have to be updated and revised to reflect the changes that occur when the guidance documents are consolidated. For new requirements, significant resources may be required but, for purely administrative updates, the costs and burden may be relatively small. Until the RPR are published and the drafts of the proposed REGDOCs are available for consultation, the impact of any changes cannot be assessed.

The administrative burden for changes would be lessened if the proposed REGDOCs provide flexible timelines. For example, administrative changes to program and procedure documents, the timelines should permit changes to be deferred until the documents would be revised in the normal course of document review. For new requirements, timelines should be commensurate with the complexity and significance of the change.

Thank you for the opportunity to provide feedback on this Discussion Paper. Cameco looks forward to the opportunity to provide additional feedback on specific radiation protection and dosimetry proposals when available.

If you have any questions with respect to the above, then please contact the undersigned at (306) 956-6685 or liam_mooney@cameco.com.

Sincerely,



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