Background and context for REGDOC-2.6.4, *Chemistry Control for Reactor Facilities*

The Canadian Nuclear Safety Commission (CNSC) has posted its draft regulatory document, REGDOC-2.6.4, *Chemistry Control for Reactor Facilities*, for public consultation. The following information is designed to help Canadians participate in our public consultation. It provides an overview of the important concepts associated with this regulatory document.

Background

A chemistry control program is essential for the safe operation of a reactor facility. The chemistry control program contributes to ensuring the safe operation of the reactor facility, the long-term integrity of structures, systems and components (SSCs), and the integrity of the fuel; minimizing the buildup of radioactive material; and ensuring all releases to the environment are as low as reasonably achievable (ALARA).

Regulatory document REGDOC-2.6.4, *Chemistry Control for Reactor Facilities*, clarifies the requirements for, and provides guidance on, developing, implementing and maintaining a chemistry control program for a reactor facility. This regulatory document applies to new and existing reactor facilities, including nuclear power plants (NPPs), advanced reactors, small modular reactors (SMRs), and research reactors.

This regulatory document is based on information collected over decades from currently licensed reactor facilities. This information has been reviewed with other reactor designs in mind, in order to present the information in as technology-neutral a manner as possible and, also, to provide flexibility that allows licensees to propose alternatives that achieve the same level of safety.

For reactor designs other than currently licensed reactor facilities, proponents, applicants and licensees are strongly encouraged to apply the information and concepts from this regulatory document to the extent practicable and as best applicable to their reactor's design. The CNSC expects to work with proponents, applicants, and licensees as they develop additional operating experience with other reactor designs. REGDOC-2.6.4 will be updated as information is gathered from experience with advanced reactors and SMRs.

Context

The draft regulatory document includes a large quantity of scientific terminology and information. This text is important and necessary for full understanding of the requirements and guidance related to chemistry control, and it is well understood by chemistry staff in a reactor facility. Due to the nature of chemistry control, this level of detail is required throughout the document.

Wherever possible, the requirements and guidance are provided in clear, concise wording that describes the overall intent, and avoids specific technical details. However, some technical content is necessary to fully describe the CNSC's expectations.

Reviewers are not required to have a detailed understanding of all scientific and technical information; you are welcome to provide comments on the overall intent. All reviewers are also welcome to provide comments on the specific scientific and technical information; the CNSC's technical specialists will use their extensive experience and knowledge of various reactor designs to analyze the applicability of the comments to the content of the regulatory document.

Regulatory oversight

The CNSC, as Canada's nuclear regulator, is responsible for ensuring that anyone who plans to conduct an activity under the *Nuclear Safety and Control Act* (NSCA) can meet all of their obligations under the Act and the regulations made under the Act. The role of the CNSC is to make licensing decisions based on a thorough evaluation that an applicant is qualified to carry on the licensed activity and will make adequate provision to:

- protect the environment, the health and safety of persons
- maintain national security and meet Canada's international obligations

This evaluation is done through the detailed review of technical documents and other submissions. Should a licensing decision be made to grant or renew a licence, CNSC staff conduct inspections and use other compliance verification tools

to ensure that licensees meet the commitments they have made to protect Canadians' health, safety and security as well as the environment. CNSC staff review all information in a licence application to ensure that the submission is complete and identifies how the applicant will meet all requirements before the submission is brought to the independent Commission for a decision.

Following public consultation, draft REGDOC-2.6.4, *Chemistry Control for Reactor Facilities*, will be revised as deemed appropriate by CNSC staff, and will then be presented to the Commission. If the Commission accepts REGDOC-2.6.4, the regulatory document will be added to the CNSC's regulatory framework and may become part of the licensing basis for various reactor facilities.

Public consultation

The CNSC has posted REGDOC-2.6.4 on the CNSC Consultations page for public consultation. Comments and feedback can be emailed to consultation@cnsc-ccsn.gc.ca. As part of the public consultation, the CNSC can only respond to comments about content in REGDOC-2.6.4.

After the public consultation period closes, you will have a further opportunity to review all of the comments we have received and provide more input during a feedback-on-comments periods. After the feedback period is complete, the CNSC will review all comments and update the regulatory document as appropriate. Finally, the regulatory document will be presented to the Commission at a public meeting.