



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



RADIATION PROTECTION REGULATORY DOCUMENTS

Presented at the June 8, 2021
Commission Meeting



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PURPOSE

Request the Commission's approval of the following draft regulatory documents (REGDOCs):

- **REGDOC-2.7.1**, *Radiation Protection*
- **REGDOC-2.7.2**, *Dosimetry, Volume I: Ascertaining Occupational Dose*

To provide guidance and clarity on the application and implementation of the *Radiation Protection Regulations*



OUTLINE

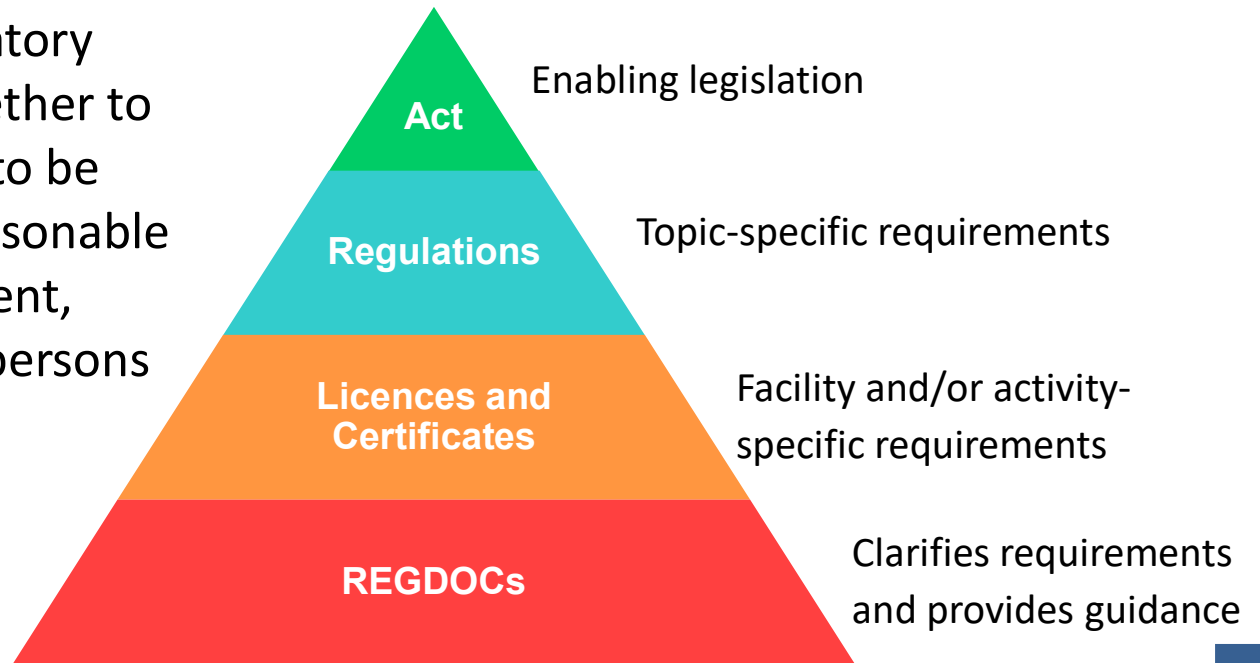
- REGDOC development process and stakeholder engagement
- Framework for Radiation Protection
- Draft REGDOCs
- Conclusion and recommendation





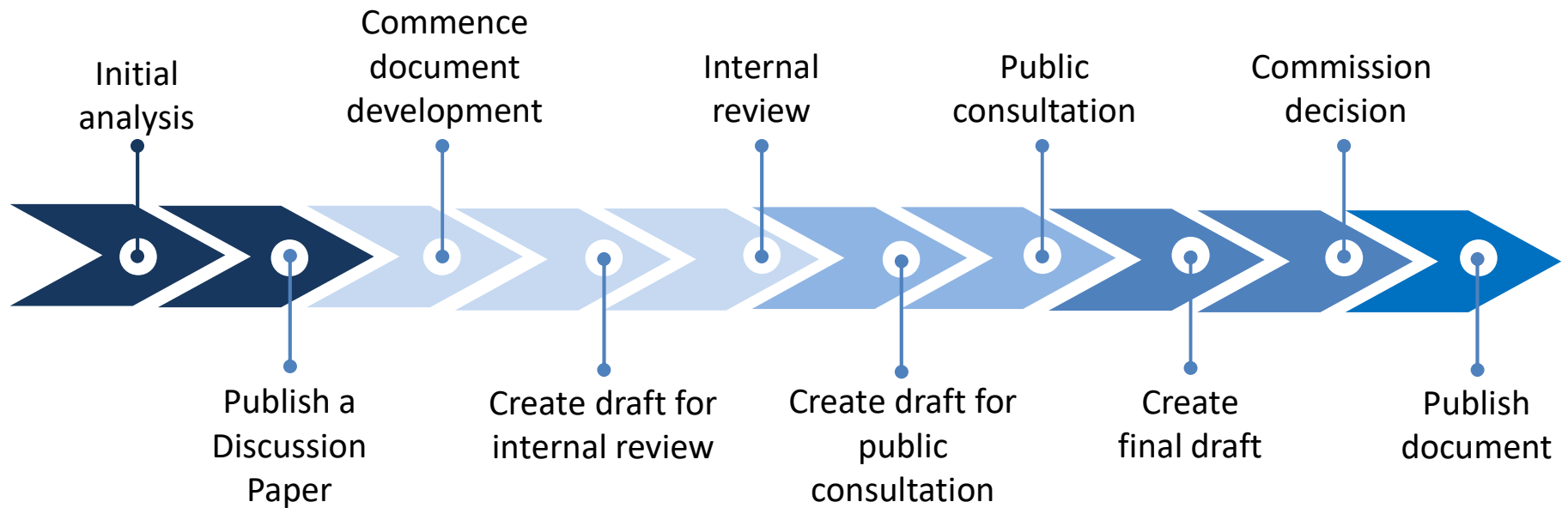
THE CNSC'S REGULATORY FRAMEWORK

All parts of the regulatory framework work together to articulate objectives to be met to prevent unreasonable risk, to the environment, health and safety of persons and national security.





REGDOC DEVELOPMENT PROCESS



REGDOCs are developed through an iterative development process



REGDOC MODERNIZATION

1.0 Regulated Facilities and Activities

- 1.1 Reactor Facilities
- 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

- 2.1 Management System
- 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
 - 2.7.1, *Radiation Protection*
 - 2.7.2, *Dosimetry, Volume I: Ascertaining Occupational Dose*
 - 2.7.2, *Dosimetry, Volume II: Technical and Quality Assurance Requirements for Dosimetry Services*
 - 2.7.3, *Radiation Protection Guidelines for the Safe Handling of Decedents*

- 2.8 Conventional Health and Safety
- 2.9 Environmental Protection
- 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

- 3.1 Reporting Requirements
- 3.2 Public & Indigenous Engagement
- 3.3 Financial Guarantees
- 3.4 Commission Proceedings
- 3.5 CNSC processes and practices
- 3.6 Glossary of CNSC terminology



FRAMEWORK FOR RADIATION PROTECTION

- Radiation protection requirements are defined in the *Radiation Protection Regulations* (RPR)
- The RPR were recently amended
- The current framework includes 9 regulatory documents
- Two new draft REGDOCs were developed in support of the updated RPR and are meant to supersede the existing documents

Modernizing the radiation protection regulatory framework



CURRENT PUBLISHED REGULATORY DOCUMENTS

- **G-91**, *Ascertaining and Recording Radiation Doses to Individuals* (2003)
- **G-121**, Revision 1, *Radiation Safety in Educational, Medical and Research Institutions* (2000)
- **G-129**, Revision 1, *Keeping Radiation Exposures and Doses “As Low as Reasonably Achievable (ALARA)”* (2004)
- **G-147**, *Radiobioassay Protocols for Responding to Abnormal Intakes of Radionuclides* (2003)
- **GD-150**, *Designing and Implementing a Bioassay Program* (2010)
- **G-228**, *Developing and Using Action Levels* (2001)
- **G-313**, *Radiation Safety Training Programs for Workers Involved in Licensed Activities with Nuclear Substances and Radiation Devices, and with Class II Nuclear Facilities and Prescribed Equipment* (2006)
- **RD-58**, *Thyroid Screening for Radioiodine* (2008)
- **S-260**, *Making Changes to Dose-Related Information Filed With the National Dose Registry* (2004)



AMENDED RADIATION PROTECTION REGULATIONS

- Amended RPR are largely patterned after the International Commission on Radiological Protection's (ICRP) Publication 103 (2007) and the International Atomic Energy Agency's (IAEA) General Safety Requirements, Part 3 (2014)
- Rationale for revising the RPR:
 - Changes to international benchmarks
 - Operational issues and lessons learned identified through implementation
 - Fukushima accident (2011)
- Revised Regulations came into force when they were published November 25, 2020 in *Canada Gazette* Part II
 - Transitional provisions came into force January 1, 2021



RADIATION PROTECTION REGDOCS

- Draft Radiation Protection Regulatory Documents (REGDOCs):
 - REGDOC 2.7.1, *Radiation Protection* and REGDOC 2.7.2, *Dosimetry, Volume I: Ascertaining Occupational Dose*
- The draft REGDOCs:
 - Provide clear guidance for radiation protection and dosimetry that is aligned with the amended RPR
 - Incorporate and update existing CNSC regulatory guidance on radiation protection and dosimetry
- Public consultation on draft REGDOCs coincided with *Canada Gazette* Part I consultation for RPR, with additional targeted consultations
- Documents have been updated to reflect the final version of the RPR and have taken into account the feedback received during the consultation periods



REGDOC-2.7.1, *Radiation Protection*

- Incorporates and updates guidance from previously published documents on radiation protection
- Structured to align with each section of the RPR
- Provides new guidance on:
 - Radiation protection programs
 - Principles of worker dose and radiological hazard control
 - Radiation detection and measurement instrumentation
 - Provision of information for nuclear energy workers



REGDOC-2.7.2, *Dosimetry, Volume I: Ascertaining Occupational Dose*

- Incorporates and updates guidance from previously published documents on occupational dosimetry
- Elaborates and expands on methods and techniques to ascertain dose
- Provides new guidance on:
 - External dosimetry, including extremities and lens of the eye
 - Calculating whole-body external effective dose from multiple dosimeters
 - Assessment of equivalent dose associated with skin contamination events
 - Assessment of dose in relation to infants of breastfeeding NEWs



PUBLIC CONSULTATION

EARLY CONSULTATION

113 comments

April 29 to
November 10, 2016

PUBLIC CONSULTATION

207 comments

2.7.1: March 21 to July 19, 2019

2.7.2, Vol. I: April 24 to July 19, 2019

FEEDBACK ON COMMENTS

No additional comments

August 14 to
September 4, 2019

ADDITIONAL TARGETED CONSULTATION

28 comments

November 26, 2020 to
January 11, 2021

Information session
March 10, 2021



KEY TOPICS FROM CONSULTATION ON BOTH REGDOCS

- Requests for clarification on guidance versus requirements
- Concerns about prescriptive wording and requests for more flexibility in the guidance
- Comments specific to the requirements of the RPR rather than on the guidance provided in the REGDOCs

**Both REGDOCs were revised to make it clear that
the documents provide guidance**



KEY TOPICS FROM CONSULTATION ON REGDOC-2.7.1

- Labelling of containers and devices containing nuclear substances
 - Clarity was provided, taking into account some of the proposed changes requested by stakeholders
 - Licensee-specific situations should be discussed with CNSC staff and assessed on a case-by-case basis using the general principles outlined in the REGDOC
- Radiation detection and measurement instrumentation
 - Guidance and technical clarifications were added to improve the guidance provided
- Monitoring for radioactive contamination
 - Requested clarifications were made to improve the guidance



KEY TOPICS FROM CONSULTATION ON REGDOC-2.7.2, DOSIMETRY, VOLUME I

- Ascertaining and monitoring doses to the lens of the eye
 - Clarity was provided on methodologies for monitoring and recording of doses to the lens of the eye and the use of the National Dose Registry database for recording such doses
- Implementing recommendations from International Commission on Radiological Protection's Publication 103 (ICRP-103)
 - Additional information was provided on the application of tissue and weighting factors from this publication
 - Text was added to confirm that licensees may continue to use existing internal dose coefficients until the ICRP has published all of the updated dose coefficients



IMPLEMENTATION OF RADIATION PROTECTION REGDOCs

If approved:

- The REGDOCs will be published on the CNSC website
- Subscribers to the CNSC website and commenters will receive a notification

**For licensees with licence condition handbooks,
these REGDOCs will be added as guidance**



CONCLUSIONS

The REGDOCs:

- Were developed through extensive consultation with multiple stakeholders
- Were revised to provide clear and useful guidance
- Reflect the latest requirements set out in the RPR and modernize the CNSC's regulatory framework on radiation protection



RECOMMENDATION

CNSC staff recommend that the Commission approve:

- **REGDOC-2.7.1**, *Radiation Protection*
- **REGDOC-2.7.2**, *Dosimetry, Volume I: Ascertaining Occupational Dose*



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Thank you



Questions

