



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



Approval for:
**REGDOC-2.4.4, *Safety Analysis
for Class 1B Nuclear Facilities***



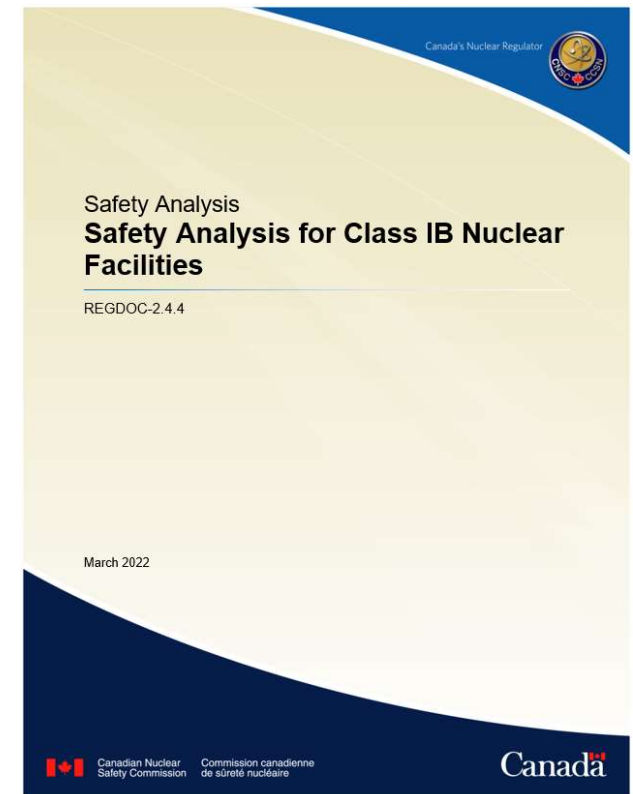
e-Doc 6710979 (PPTX)
e-Doc 6757506 (PDF)

Commission Meeting, June 28, 2022
CMD 22-M12.A



PURPOSE

Request for approval of REGDOC-2.4.4,
Safety Analysis for Class IB Nuclear Facilities.





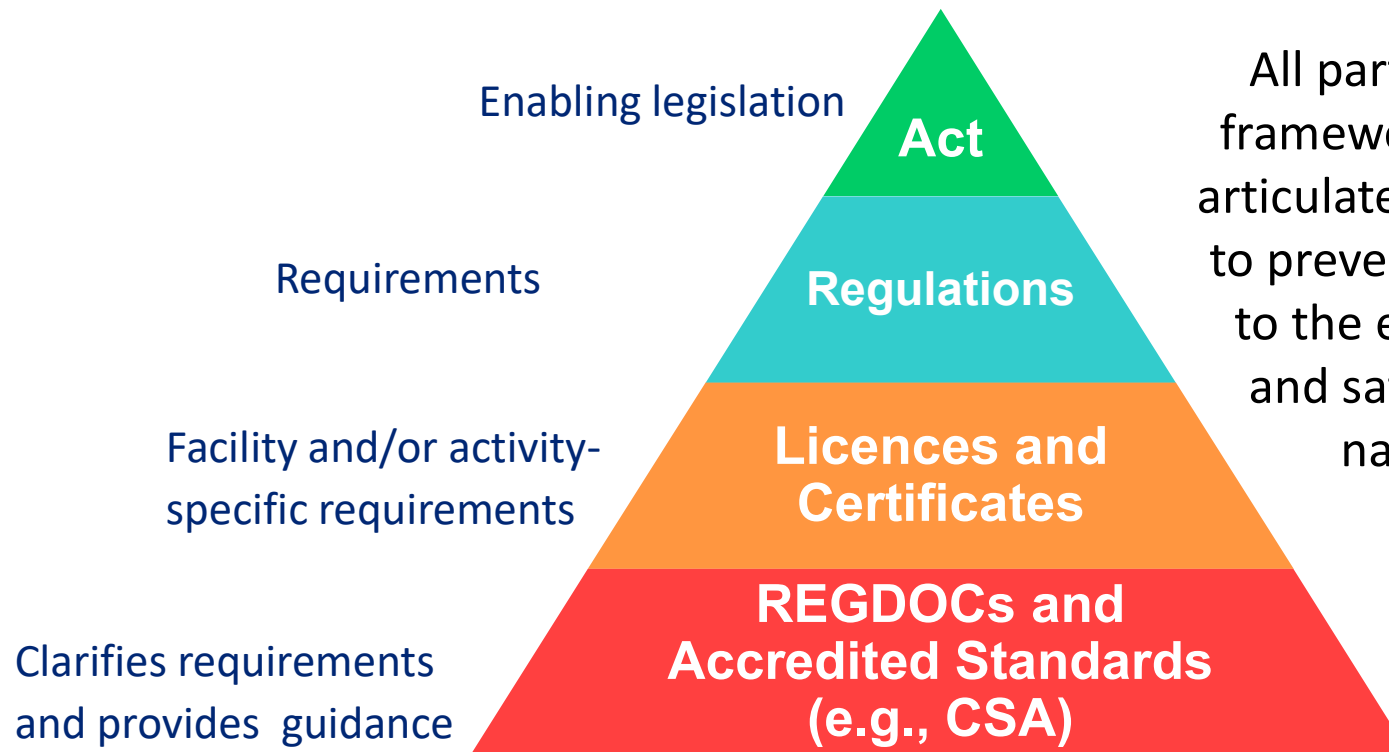
OUTLINE



- ✓ CNSC's regulatory framework
- ✓ Purpose of REGDOC
- ✓ Current content for Class IB safety analysis
- ✓ Public consultation including key Issues
- ✓ Implementation
- ✓ Conclusion & 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 STRUCTURE

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**
 - 2.4.1 Deterministic Safety Analysis
 - 2.4.2 Probabilistic Safety Assessment (PSA) for Reactor Facilities
 - 2.4.3 Nuclear Criticality Safety
 - **2.4.4 Safety Analysis for Class IB Nuclear Facilities**
 - 2.4.5 Nuclear Fuel Safety

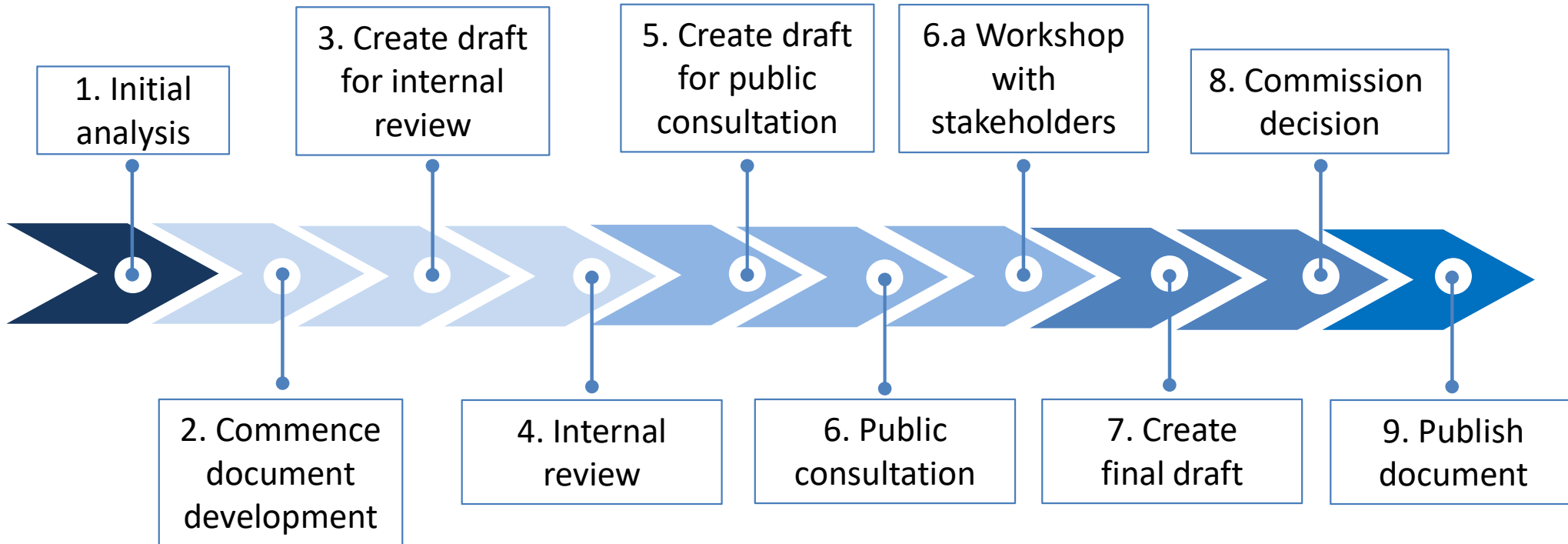
- 2.5 Physical Design
- 2.6 Fitness for Service
- 2.7 Radiation Protection
- 2.8 Conventional Health and Safety
- 2.9 Environmental Protection
- 2.10 Emergency Management and Fire Protection
- 2.11 Waste Management
- 2.12 Security
- 2.13 Safeguards and Non-Proliferation
- 2.14 Packaging and Transport

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



REGDOC DEVELOPMENT PROCESS



REGDOCs are developed through an iterative development process



CLASS I NUCLEAR FACILITIES

Class IA

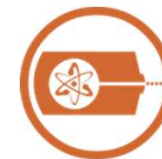


Nuclear power plants
&
Research Reactors

Class IB



Uranium fuel fabrication
and processing



Nuclear substance
processing



Nuclear research
facilities



Waste management
facilities



CLASS 1B FACILITIES IN CANADA



Clockwise from top-left: Blind River Refinery (Cameco); Port Hope Conversion Facility (Cameco); Nordion, BWXT-Nuclear Energy, Canada (BWXT), Pickering Waste Management and Western Waste Management Facility (Ontario Power Generation)



PURPOSE FOR THE REGULATORY DOCUMENT

- Currently no documents provided for conducting the safety analysis of a Class IB nuclear facility
- Existing requirements need to be codified for a consistent approach
- International standards and guidance are applied as relevant
- 2019 IRRS noted that publication of REGDOC-2.4.4 will clarify requirements and criteria for fuel cycle facilities

Fit for Purpose for existing and new Class IB facilities



SCOPE OF REGDOC-2.4.4

Requirements and guidance for safety analysis of Class IB nuclear facilities.

- For disposal facilities, the document applies to the licensed activities conducted up to the closure of the disposal facility (pre-closure)
- Graded approach can be applied to accommodate a wide range of Class IB nuclear facilities



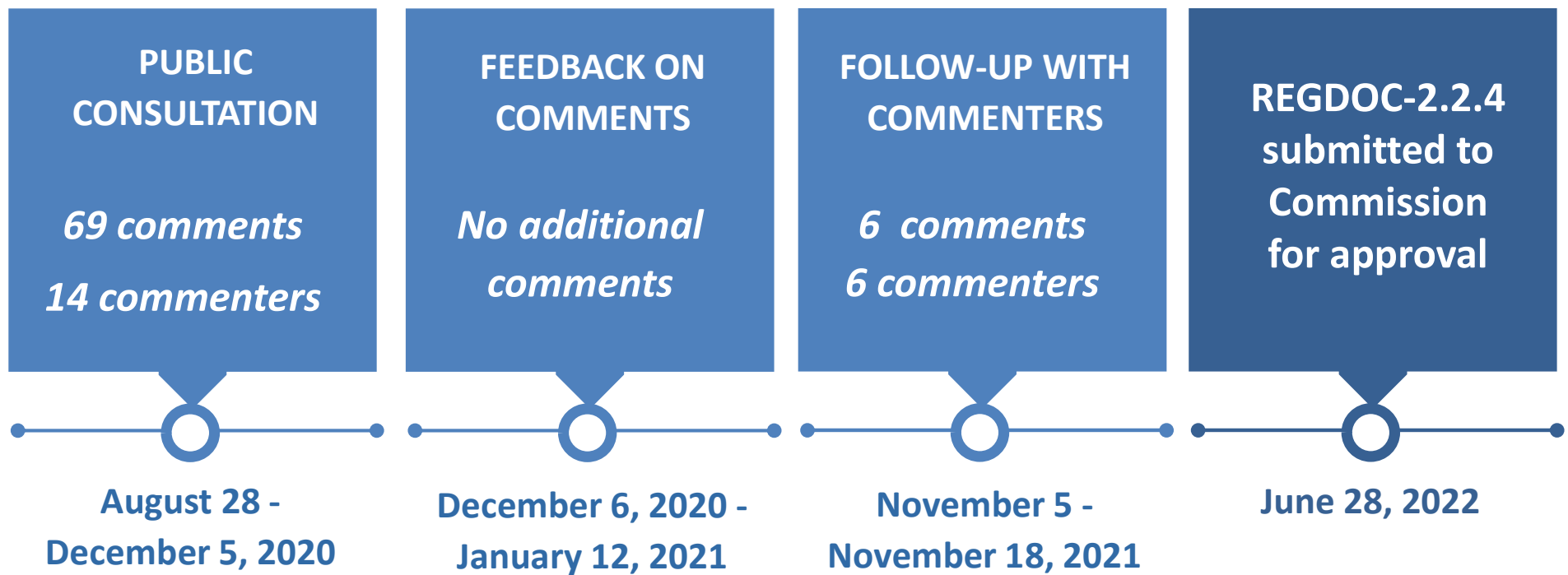
REGDOC-2.4.4 CONTENT

- **Requirements and guidance on:**
 - Safety analysis programs
 - Conduct of a safety analysis
 - Safety analysis documentation and records
- Appendices that complement the information presented in the body of the document

Latest Class IB safety analyses already in alignment



PUBLIC CONSULTATION





CONSULTATION THEMES

Major themes and requests for clarity on the topics of:

- Prescriptiveness of requirements
- Use of the risk informed graded approach
- Postulated Initiating Events



1

CONCERN 1: Prescriptiveness Of Requirements

Issue:

- Stakeholders suggest that REGDOC-2.4.4 is overly prescriptive, noting that not all Class IB nuclear facilities are “nuclear fuel cycle” facilities

CNSC Response:

- Text redrafted to address the broad range of Class IB facilities
- Staff agree that not all Class IB nuclear facilities are nuclear fuel cycle facilities, and have taken that into account in development
- The content of the document does not prevent licensees and applicants to propose alternate approaches



2

CONCERN 2: Use Of The Graded Approach

Issue:

- Use of requirements in REGDOC-2.4.4 are inconsistent with the application of the risk informed graded approach

CNSC Response:

- Revised text in REGDOC-2.4.4 to add clarity on the use of the risk informed graded approach
- REGDOC-3.5.3, *Regulatory Fundamentals* is being revised to add information on the application of the risk informed graded approach



3

CONCERN 3: Postulated Initiating Events

Issue:

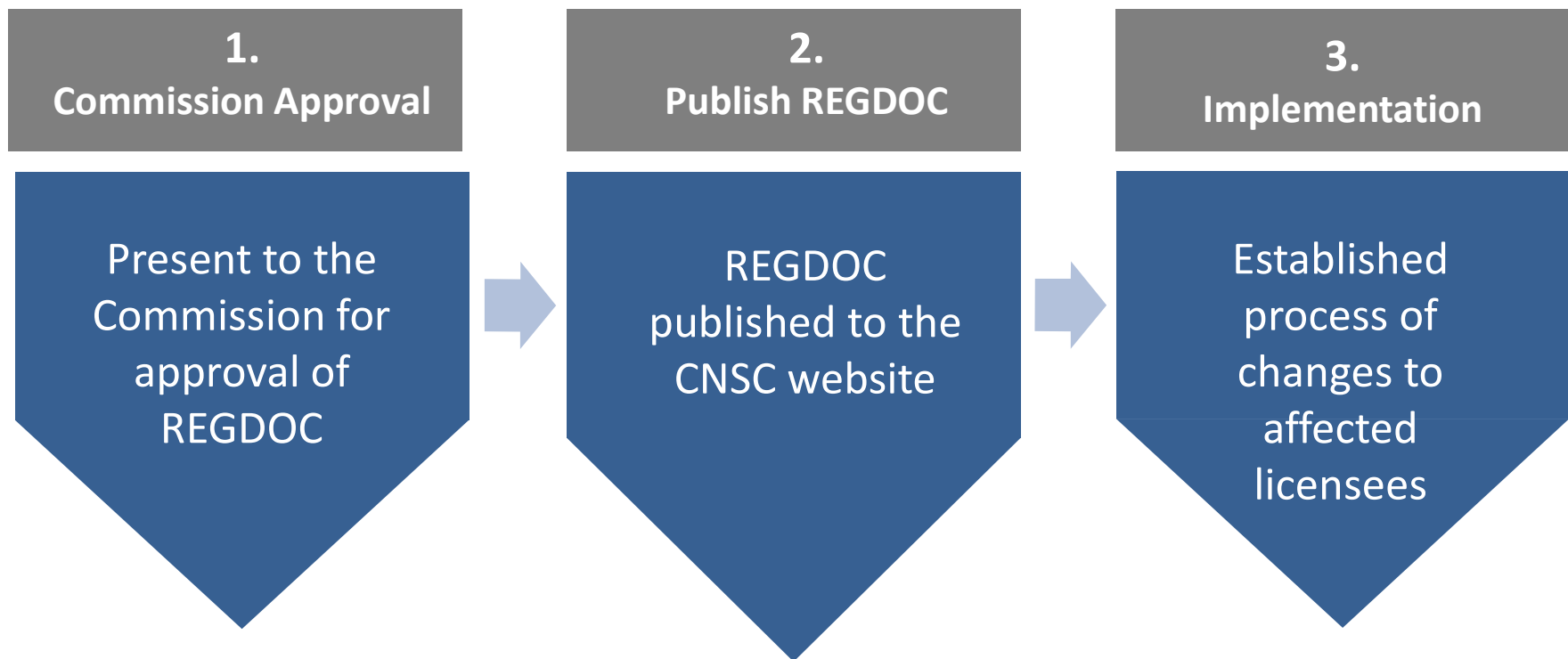
- Industry disagrees that external hazards/events should be referred to as postulated initiating events (PIEs) as they do not necessarily lead to failures

CNSC Response:

- Recognize that the licensee has the responsibility to assess all potential hazards, including external, and select all credible hazards/events that lead to failure, for further analysis
- Staff agree that not all external hazards should be referred to as PIEs, however, the document describes the 3 stages of selection of credible hazards/events that lead to failures, and only hazards/events deemed credible require safety analysis



CONSISTENT APPROACH TO IMPLEMENTATION





CONCLUSION

REGDOC-2.4.4:

- Clarifies requirements and provides guidance to demonstrate the safety of a Class IB nuclear facility
- Reflects best practices and lessons learned
- Is supported by a strong scientific basis
- Was developed with meaningful stakeholder consultation



RECOMMENDATION

CNSC staff recommend:

The Commission approve **REGDOC-2.4.4**, *Safety Analysis for Class IB Nuclear Facilities*.



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Thank You! Questions?



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