



The Canadian Nuclear Safety Commission's Regulatory Framework

Argonne National Laboratory Facility Decommissioning Training Course

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nuclearsafety.gc.ca

Outline

- Role of the CNSC
- The CNSC's regulatory framework
- Licensing process
- Decommissioning plan requirements

Canadian Nuclear Safety Commission

- Established in May 2000, under the ***Nuclear Safety and Control Act (NSCA)***
- Replaced the AECB of the 1946 ***Atomic Energy Control Act***
- Quasi-judicial administrative tribunal
- Commission Tribunal members are independent

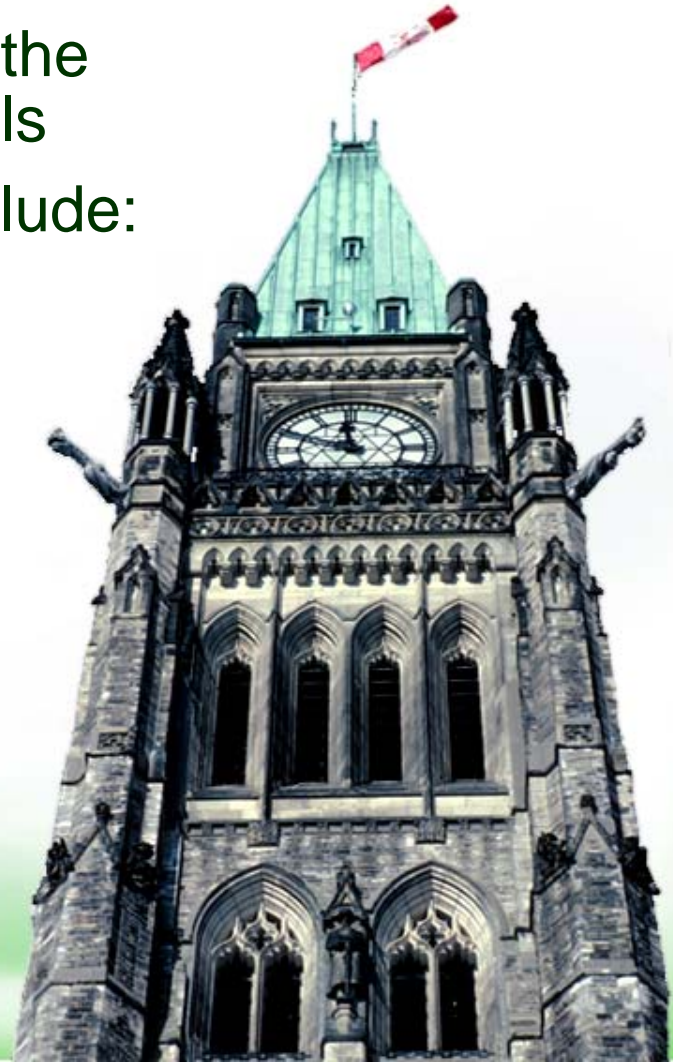


*Canada's Independent Nuclear Regulator,
65 Years of Experience*

Nuclear Safety and Control Act

- Modern legislation
- Establishes the CNSC to regulate the use of nuclear energy and materials
- One modern act for the '4 S' to include:
 - safety
 - security
 - safeguard
 - sources of radiation (such as particle accelerators)

CNSC is the Sole Nuclear Regulator in Canada



CNSC Regulates Facilities and Activities...

The fuel cycle

- uranium mines and mills
- uranium fuel fabricators and processing
- nuclear power plants
- waste management facilities

Other facilities and activities

- nuclear substance processing
- industrial and medical applications of nuclear substances
- research and educational facilities
- export/import of controlled nuclear substances, equipment and technology



...from Cradle to Grave

Scientific, Technical, Professional Staff

50% of our technical and operational staff have **PhD** or **Master's** degrees, or are **professional engineers** in the following fields

- Nuclear
- Chemistry
- Physics
- Mathematics
- Biology
- Environmental Sciences
- Epidemiology

*Qualified, Competent
and Dedicated*



CNSC Staff Located Across Canada

Staff: ~ 850

Licensees: 2,050

Licences: 3,300

Calgary
Western Regional Office

Saskatoon
Uranium Mills and Mines
Division Regional Office

Gentilly-2

Point Lepreau

HQ in Ottawa
5 site offices at power reactors
1 site office at Chalk River
4 regional offices

Chalk River

HQ

Laval Eastern Regional Office

Bruce A & B

Darlington

Mississauga Southern
Regional Office

Pickering A&B

Working Toward Our Vision...

Core Activities +

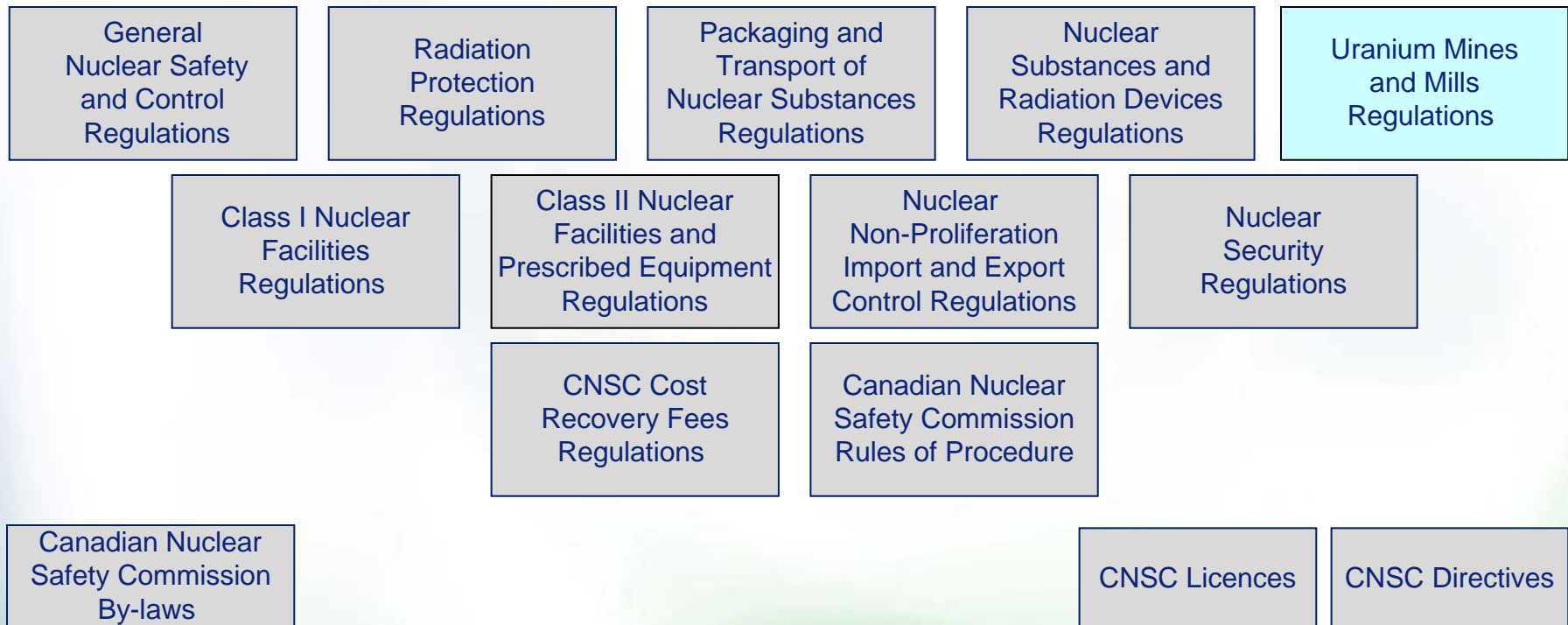
- **commitment to ongoing improvements**
- **clarity of requirements**
- **capacity for action**
- **communications**



...in Pursuit of Excellence

CNSC Regulatory Framework

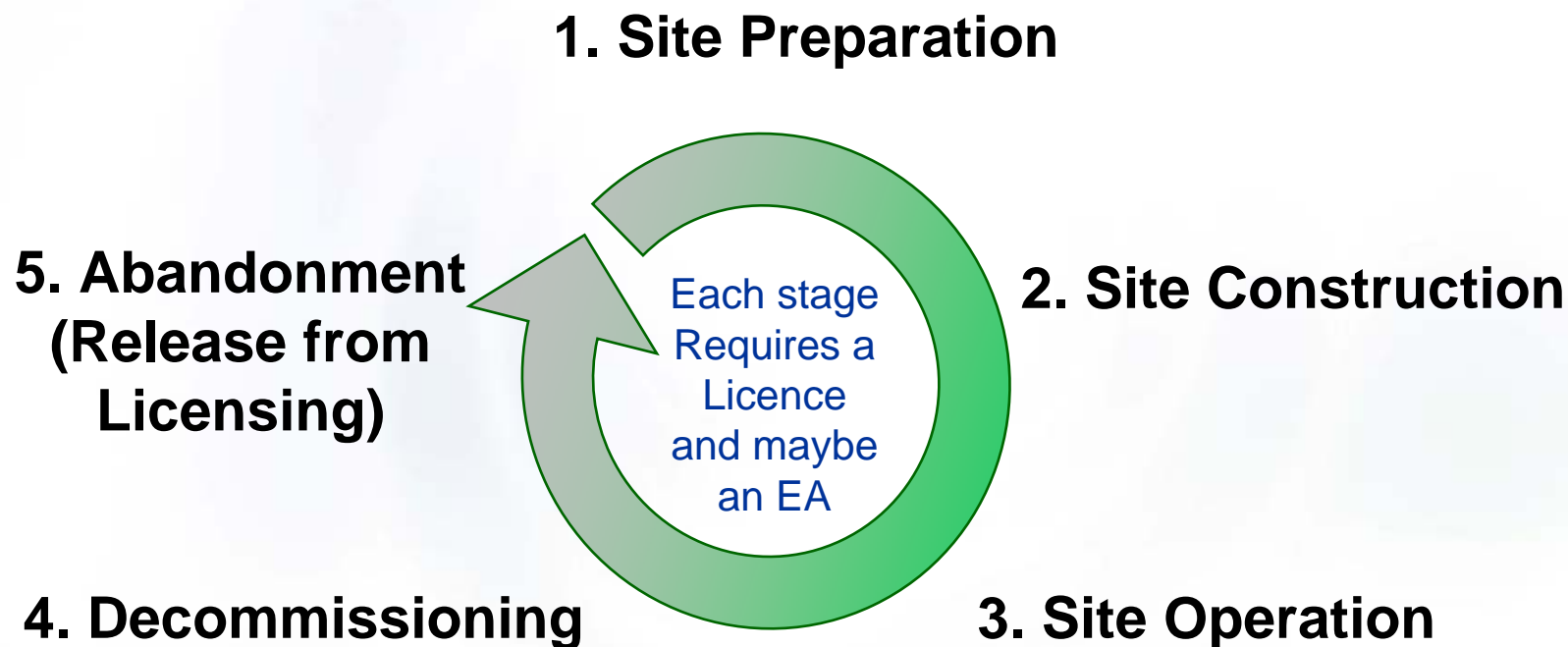
Nuclear Safety and Control Act



Regulations

- NSCA, section 26(e)
“No person shall, except in accordance with a licence, prepare a site for, construct, operate, modify, decommission or abandon a nuclear facility”
- Class I Regulations, section 7
defines the information required in licence applications for a decommissioning licence for a Class I nuclear facility
- Class II Regulations, section 5
defines the information required in licence applications for a decommissioning licence for a Class II nuclear facility
- Uranium Mine and Mill Regulations, section 7
defines the information required in licence applications for a decommissioning licence for a uranium mine and/or mill

Licensing Process



Financial guarantees also required for steps 1-4

Compliance Program

Promotion:

- proactive, planned, guidance to remain compliant

Verification:

- inspections, event reviews, review of performance indicators, program audits
- in order to determine compliance and safety significance of non-compliances

Enforcement:

- follow-up to inspection, graduated approach



Compliance Program: Baseline Activities

- Baseline compliance activities are risk-based, common throughout the CNSC site offices, and consist of:
 - desktop reviews
 - surveillance and monitoring
 - licensee event reviews
 - system or program implementation inspections (Type I and Type II)
 - regulatory performance indicators reviews
- self-reporting by licensees



CNSC Decommissioning Guide

- CNSC Regulatory Guide G-219, *Decommissioning Planning for Licenced Activities*
 - lifecycle approach
 - Preliminary Decommissioning Plan (filed as early as possible in the lifecycle of a facility, and updated on a periodic basis)
 - Detailed Decommissioning Plan (filed prior to beginning decommissioning activities)

CSA N294

- Canadian Standards Association CSA N294-09, *Decommissioning of Facilities Containing Nuclear Substances*
- Four-phase approach
 - phase 1 – planning for decommissioning
 - phase 2 – preparation for decommissioning
 - phase 3 – execution of decommissioning
 - phase 4 – completion of decommissioning

Decommissioning Plans

CNSC Regulatory Guide G-219, *Decommissioning Planning for Licenced Activities*, and CSA N294, *Decommissioning of Nuclear Facilities*

- Planning is to be completed in two phases:
 - Preliminary Decommissioning Plan (PDP)
 - filed with the CNSC as early as possible in the facility lifecycle
 - revisited and updated as necessary
 - Detailed Decommissioning Plan (DDP)
 - filed with the CNSC prior to decommissioning
 - required for appropriate licensing action
 - refines and adds procedural and organizational detail to the PDP

Preliminary Decommissioning Plans

A PDP includes:

- preferred decommissioning strategy
- end-state objectives
- major decontamination disassembly and remediation steps
- approximate types and quantities of waste generated
- overview of principal hazards and protection strategies
- estimate of cost
- method for guaranteeing financing for decommissioning activities

Detailed Decommissioning Plans

A DDP includes:

- a 'fleshed out' description of all topics covered in the PDP
- description and diagram showing the various areas, components and structures to be decommissioned
- a history of the operation and any incidents or accidents that may affect decommissioning
- results of a comprehensive and systematic survey of the radiological and other potentially hazardous conditions
- a description of each decommissioning work package
- a description of any public consultations undertaken in the preparation of the plan, including a summary of any issues raised and how they were resolved

Detailed Decommissioning Plans (cont'd)

Also include:

- a description of the organizational project management structure
- an emergency response plan
- various programs, including quality assurance, site security, radiation protection, environmental monitoring, personnel training, human factors and final radiation survey programs
- a list of federal and provincial regulatory agencies involved in the decommissioning project.

Once approved by the CNSC, the DDP is incorporated into the decommissioning licence

Joint Regulatory Process

- The CNSC is the principal regulator of the nuclear industry
- Many other governing bodies, both federal and provincial, are also involved, including:

federal agencies

- Environment Canada
- Human Resources and Skills
Development Canada
- Transport Canada
- Health Canada
- Department of Fisheries and
Oceans

provincial agencies

- environment
- labour
- transport
- health

Decommissioning Considerations

- The principles of reuse, reduce, and recycle should always be considered
- Several licences, approvals or permits may be required for a decommissioning project (federal, provincial, municipal)
- Occupational health and safety is sometimes the most important aspect of a decommissioning project (construction in reverse)
- Safety case will continuously need to be monitored and adjusted when necessary

Decommissioning Considerations

- Institutional Controls

- Institutional controls may be classified as being either passive (site-use restrictions to the property title) or active (liquid effluent treatment systems)
- Reliance on institutional controls as a safety measure should be limited to a few hundred years, due to uncertainties on future human activities and stability of societies
- A long-term decommissioning strategy should not rely on long-term institutional controls as a safety measure, unless necessary - as in the case of uranium tailings

Decommissioning Records

- Regulatory requirement for a final end-state decommissioning report (see section 11 of CSA N294-09)
- Retention of records (Class I records 10 years after the expiry date of a *Licence to Abandon*)
- Retention period may be affected by factors other than regulatory requirements (legal liabilities)

Conclusions

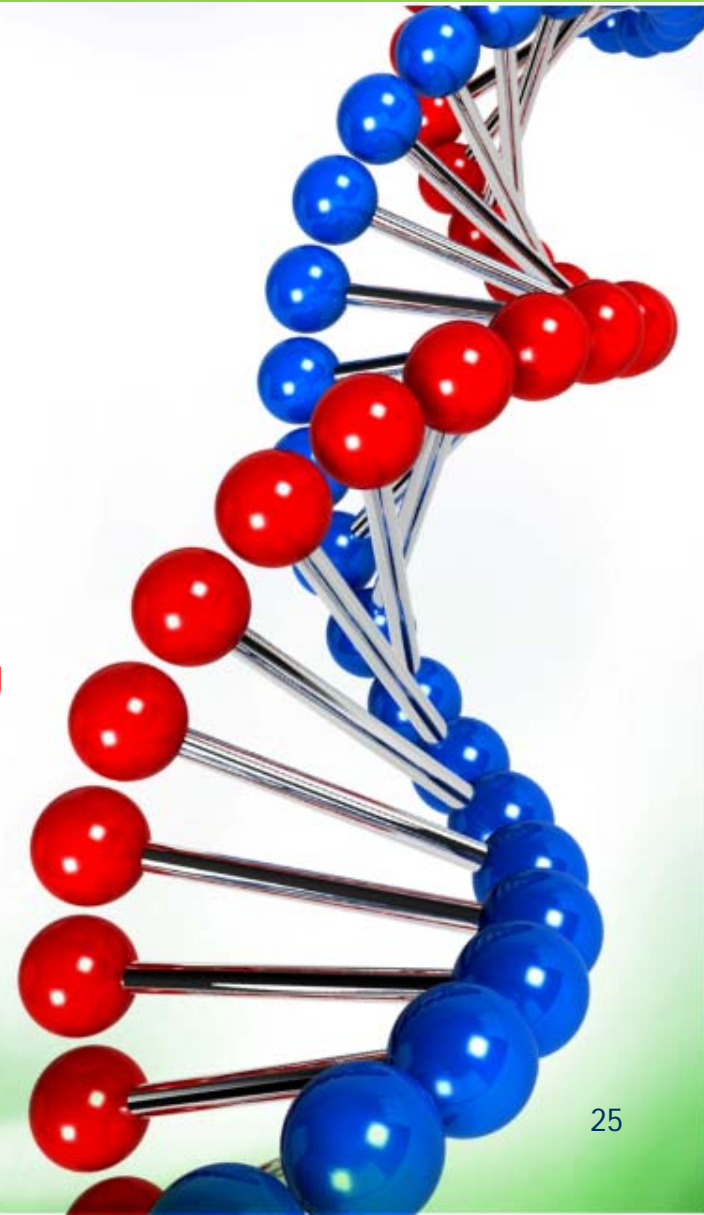
Execution of decommissioning shall provide for:

- protection of health and safety of workers and public
- protection of the environment
- compliance with regulatory requirements
- keeping radiation exposures as low as reasonably achievable (ALARA)
- management of all radioactive and hazardous materials generated
- security
- safeguards

Regulating for Canadians...

**We will not
compromise
safety...**

...it's in our DNA!



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More information on our Web site
nuclearsafety.gc.ca

