



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

# Regulation of Synchrotron Facilities in Canada



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Canada



# INTRODUCTION

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- Scope of the Presentation includes:
  - Background and History
  - The CNSC's Mandate
  - The CNSC Structure
  - A Two-Day Hearing Process
  - CNSC's Risk Based Approach to Regulation
  - Compliance Program
  - Conclusions



# BACKGROUND AND HISTORY

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- In 1946, the *Atomic Energy Control Act* created the Atomic Energy Control Board (AECB).
- May 31, 2000, *Nuclear Safety and Control Act* (NSCA) came into force
- Replaced by Canadian Nuclear Safety Commission (CNSC).
- The CNSC's responsibilities have broadened



# THE CNSC's MANDATE

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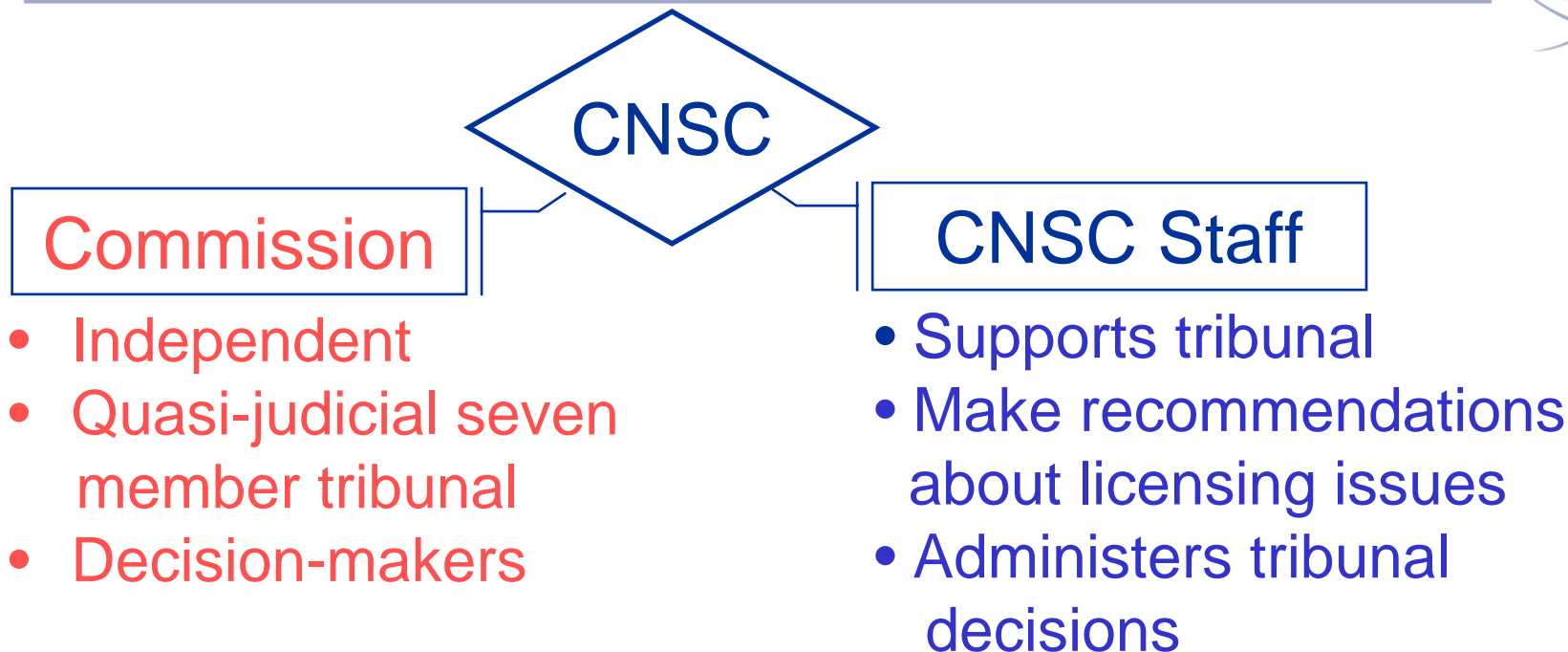


“To regulate the development, production and use of nuclear energy, nuclear substances, prescribed equipment, and prescribed information in order to:

- prevent unreasonable risk to the environment and to the health and safety of persons;
- prevent unreasonable risk to national security; and
- achieve conformity with measures of control and international obligations to which Canada has agreed.”



# THE CNSC STRUCTURE

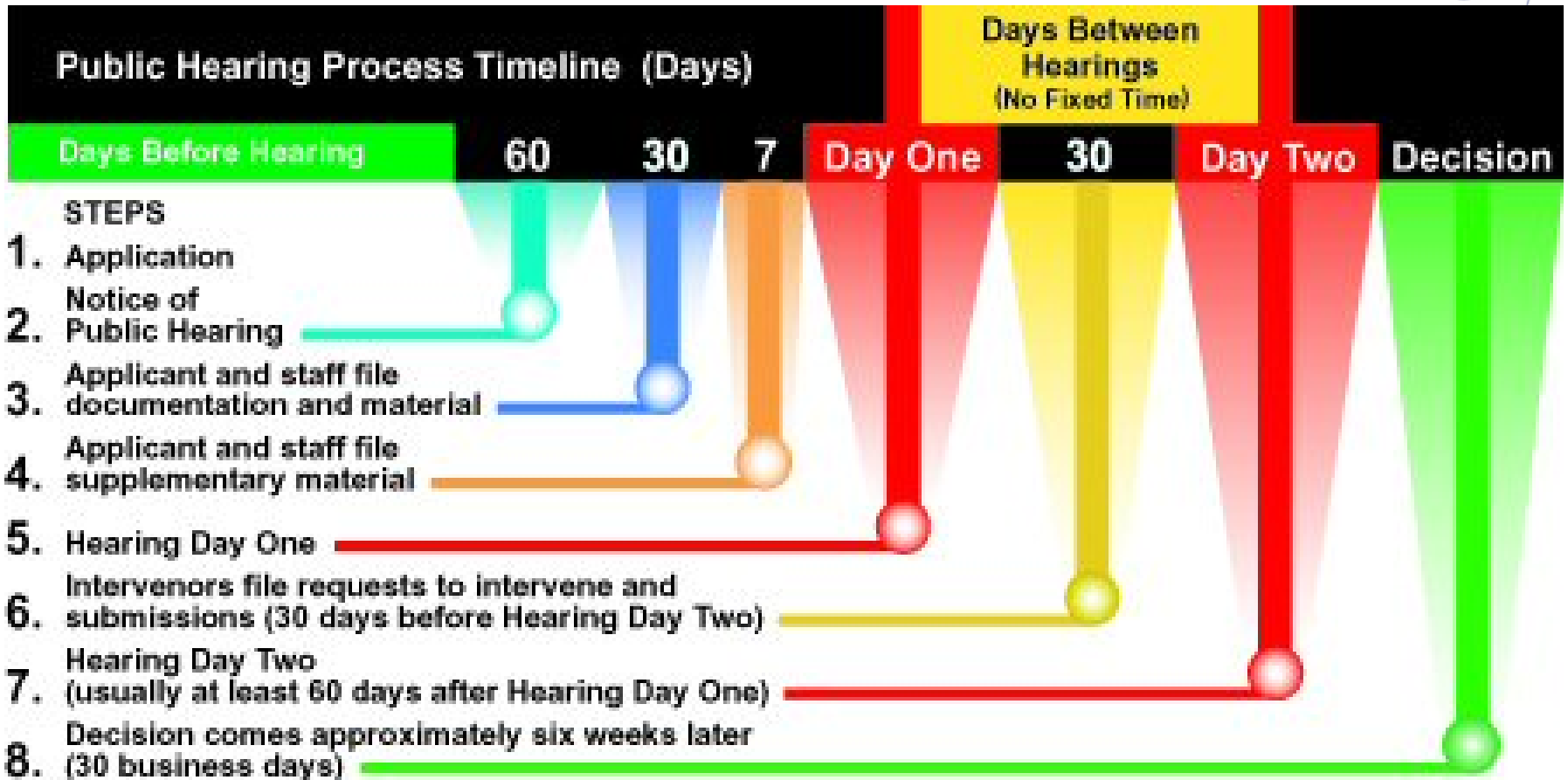


- Independent
- Quasi-judicial seven member tribunal
- Decision-makers

- Supports tribunal
- Make recommendations about licensing issues
- Administers tribunal decisions

• CNSC website: ([www.nuclearsafety.gc.ca](http://www.nuclearsafety.gc.ca))

# OUTLINE FOR A TWO-DAY HEARING PROCESS

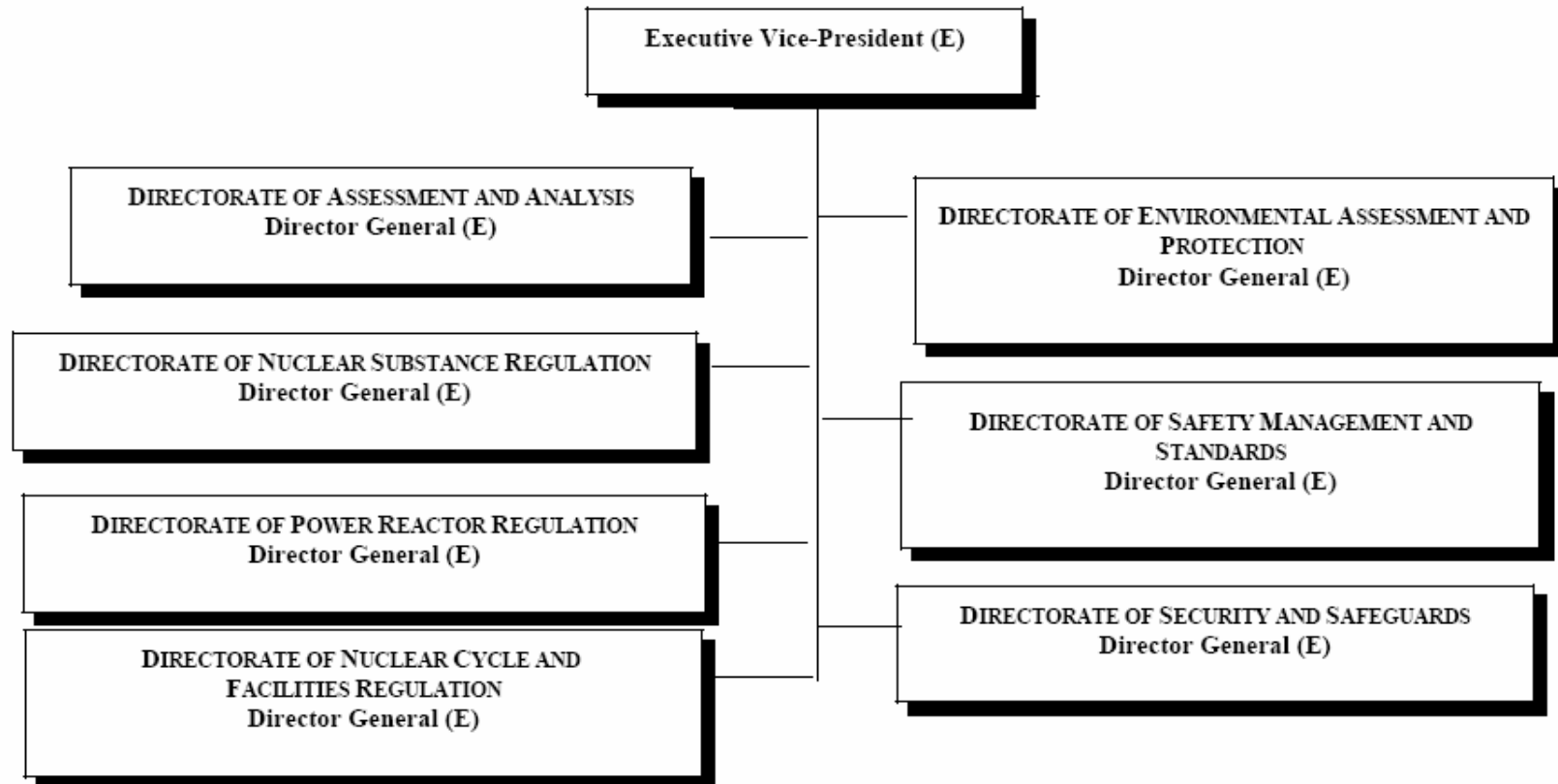




# OPERATIONS BRANCH



## OPERATIONS BRANCH





# SYNCHROTRON DESIGNATION AS A CLASS IB FACILITY

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- Processing and Research Facilities Division (PRFD)
- Compliance and licensing of range Class IB facilities
- Class I Facility Regs: Particle Accelerator > 50 MeV
- Two facilities in Canada – only one synchrotron



# RISK BASED APPROACH

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- Diverse range of nuclear facilities
- Five risk areas are assessed on their impact on commissioning, operation and decommissioning:
  - operating organization
  - facility design and condition
  - emergency preparedness
  - on-site personnel protection, and
  - environmental protection
- Risk provide rationale for regulatory effort



# COMPLIANCE PROGRAM

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- Class IB synchrotron facility – low to medium risk
- Two compliance inspections annually
- CNSC completes specific program area inspections
- Technical risk areas broken down into safety areas
- Key safety areas include RP, QA, Training, Emergency Preparedness and Fire Protection

# COMPLIANCE PROGRAM CONT'D

- Radiation protection – regulatory effective dose limits

Person	Period	Effective Dose (mSv)
Nuclear Energy Worker	One year dosimetry period	50
	Five year dosimetry period	100
Pregnant NEW	Balance of pregnancy	4
A person who is not a NEW	One calendar year	1

- Verify training records for staff and users
- Investigate events where dose rates elevated



# COMPLIANCE PROGRAM CONT'D

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- Quality Assurance
  - Relatively new facility – new beamlines, many new users
  - Periodic inspections of QA program implementation



# COMPLIANCE PROGRAM CONT'D

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- Training
  - Ensure sufficient qualified workers
  - Transient visitors
  - Review records are maintained
  - Refresher training component



# COMPLIANCE PROGRAM CONT'D

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- Emergency Preparedness (EP)
  - Documented EP and response plan
  - Plans developed in accordance with risk
  - Adequate testing and training
- Fire Protection
  - Compliance with NBC and NFC
  - Annual third party reviews



# OTHER RELEVANT COMPLIANCE INFORMATION

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- Public Information Program
  - Outreach to public in local community
- Decommissioning Planning
  - Preliminary Decommissioning Plan (PDP)
  - Financial Guarantee (FG)



# FINANCIAL GUARANTEE

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- Ensures funds available for decommissioning
- Two Phases
  - Safe State of Closure
  - Remaining decommissioning tasks
- Changes at facility must be reflected in FG costs
- Regulatory Guides – PDP (G-219) and (FG) G-206



# CONCLUSION

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- Challenges result from diversification in nuclear facilities
- Risk based regulatory plan – maximize efficiency
- Safety areas are used to measure compliance
- Evaluation of programs and their implementation



# Questions?

[www.nuclearsafety.gc.ca](http://www.nuclearsafety.gc.ca)