



# Introduction to Nuclear Law

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# What We Will Cover

- What is nuclear law and why do we need it?
- Essential components and principles
- International nuclear legal framework – overview of subject areas and instruments
- International law requirements for national nuclear law
- The example of Canada's regulatory framework
- Concluding thoughts and references for further discussion



# What is nuclear law?

## Why do we need it?



# What Is Nuclear Law?

... the set of **special legal rules** created **to regulate** the conduct of those who engage in activities related to **fissionable materials**, and other activities involving **ionizing radiation**

- **Public law** – law that governs
  - Relations between the State and its population in matters of public order
  - Relations between States; relations between States and international bodies
- **Both international and national** in its scope
  - Reflects the international law instruments to which State has committed
  - Reflects the national view on nuclear



# What's So Special About Nuclear?

- Nuclear energy **brings significant benefits** (clean electricity, medical diagnosis and treatment, industrial and agricultural uses) and **poses special risks** (environment, health and safety, proliferation)
  - Nuclear law is regulatory – if risks outweighed benefits, the law would prohibit the activity
  - The focus is on balancing risks and benefits: society is protected, such that benefits are realized

Example: Canada's ***Nuclear Safety and Control Act*** mandates the CNSC to “regulate to prevent unreasonable risk ...” and to implement Canada’s international obligations



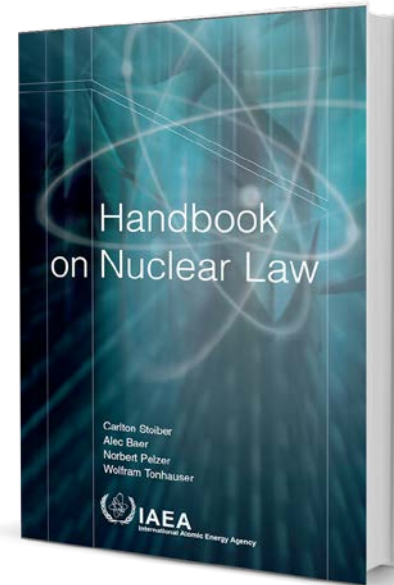
# Nuclear Law

## Essential components and principles



# *Handbook on Nuclear Law - Principles*

- **Safety**
- **Security**
- **Responsibility**
- **Permission**
- **Continuous control**
- **Compensation**
- **Sustainable**
- **development**
- **Compliance**
- **Independence**
- **Transparency**
- **International cooperation**





# *Handbook on Nuclear Law - Principles*

**Safety** – The primary requisite for the use of nuclear energy

**Security** – Legal measures to protect against diversion from legitimate uses

**Responsibility** – The primary responsibility for safety rests with the licensee

**Permission** – Prior authorization required for activities

**Continuous control** – Regulator must always be able to monitor compliance

**Compensation** – States must adopt measures to compensate for damage in case of accident

**Sustainable development** – One should not foreclose future options or rely unduly on forecasts

**Compliance** – States adhering to international laws must reflect this in national nuclear law

**Independence** – The regulator must be able to exercise independent expert judgment on safety

**Transparency** – Relevant risk/benefit information must be available to stakeholders

**International cooperation** – National law should allow for cooperation, learning, harmonization





# Sources of International Nuclear Law

- Treaties/conventions, bilateral and multilateral agreements
- International custom
- Guidance from international bodies (IAEA, OECD/NEA)





# Sources of International Nuclear Law (cont'd)

The focus of international nuclear law has evolved over time, and in reaction to events

- 1950s – focus on development – establishment of international bodies
- 1960s – focus on non-proliferation, safety and liability
- 1970s – focus on trade, physical protection, non-proliferation
- 1980s–90s – post Three Mile Island / Chernobyl – focus on safety, emergency response
- 2000s – focus on security, terrorism
- Today – focus on safety, liability



# International nuclear legal framework

## Overview of subject areas and instruments



# What Does International Nuclear Law Cover?

- Nuclear safety
  - Radiation protection
  - Emergency preparedness and response
  - Waste management/decommissioning
  - Environmental protection
- Nuclear security – physical protection, terrorism
- Safeguards and non-proliferation
- International trade, nuclear cooperation
- Third-party liability, compensation and insurance





# Nuclear Safety

Protecting people and the environment from the potential for negative effects of ionizing radiation – **soft and hard law**

- **International standards** – IAEA basic safety standards, codes of conduct
- ***Convention on Nuclear Safety* (CNS) (1994)**
  - Regulatory framework obligations and safety culture
  - Safety requirements for siting, design, construction and operation of nuclear power plants
  - Codifies nuclear safety norms, places them in the structure and language of international law
  - Peer review – national reports and review meetings every three years
  - ***Vienna Declaration on Nuclear Safety* (2015)**



# Nuclear Safety (cont.)

- **Radiation protection**
  - Implementing ICRP, international standards – as low as reasonably achievable (ALARA)
  - Emergency response – ***Convention on Early Notification of a Nuclear Accident; Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency***
- ***Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management***
  - “Sister” incentive convention to the CNS, for spent fuel and radioactive waste (joins them), with a broad scope for environmental protection
  - Requirements for waste facilities, safe transboundary movement of spent fuel, waste



# Nuclear Safety (cont.)

- ***IAEA Regulations for the Safe Transport of Radioactive Material***
  - Packaging requirements, competent authority controls
  - IAEA Regulations are incorporated into national law, in order to be binding
- **Environmental protection**
  - ***Aarhus Convention*** – access to environmental information, public participation
  - ***Espoo Convention, Kiev Protocol*** – cross-border impacts, strategic environmental assessment



# Nuclear Security

## Protecting nuclear material from bad actors – **hard and soft law**

- Preventing, detecting, responding to acquisition of nuclear material for malevolent use:
  - 1979 ***Convention on the Physical Protection of Nuclear Material***; 2005 Amendment to extend scope to domestic facilities, expand coverage (in force May 2016)
  - ***International Convention for the Suppression of Acts of Nuclear Terrorism***
  - Threat and risk assessments – physical security requirements
  - UN Security Council resolutions
  - ***Code of Conduct on the Safety and Security of Radioactive Sources***





# Non-Proliferation and Safeguards

## ***Treaty on the Non-proliferation of Nuclear Weapons (NPT) (1970)***

- Art I: Nuclear Weapon States (NWS) won't share weapons; won't help Non-NWS acquire weapons
- Art II: Non-NWS won't accept weapons; won't seek to acquire weapons
- Art III:
  - Non-NWS will accept safeguards – “on all source or special fissionable material in any peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.”
  - All parties undertake not to provide material or “equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-NWS for peaceful purposes” unless the material is subject to safeguards
  - Safeguards not to hamper peaceful nuclear trade/industry
- Art IV:
  - “Inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination”
  - All parties to facilitate “fullest possible exchange of equipment, materials and scientific and technical information for the peaceful uses of nuclear energy”

**The NPT bargain: Forego weapons acquisition, get nuclear power**



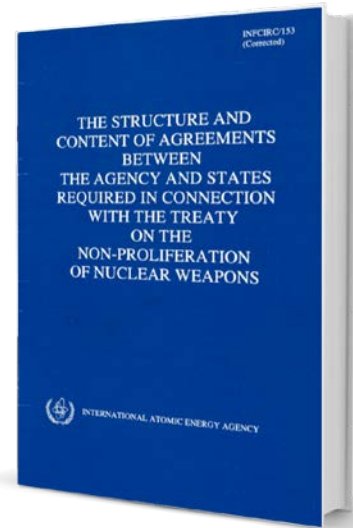
# Safeguards

## IAEA role:

- Verification that declared nuclear material and activities are peaceful
- Assurance of absence of undeclared activities

## Bilateral legal instruments for safeguards:

- Voluntary Offer Agreement (VOA) – 5 NWS, plus India
- Comprehensive Safeguards Agreement (CSA) (INFCIRC/153) – most non-NWS
- Additional Protocol (AP) (INFCIRC/540)
- CSA + AP = Fullest coverage of a state's nuclear material, current/planned activities, nuclear fuel cycle



**If IAEA is unable to verify that there has been no diversion of nuclear material, it may report this fact to the UN Security Council**



# International Trade

## Remember NPT States' obligations

- Not to provide material or “equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any NNWS for peaceful purposes” unless it is subject to safeguards
- To facilitate “fullest possible exchange of equipment, materials and scientific and technical information for the peaceful uses of nuclear energy”

## Generally, trade laws promote wide, barrier-free trade

- Nuclear is different : trade is exceptional, subject to authorization, sometimes prohibited:
  - NPT and non-proliferation policies
  - rules for competition among nuclear suppliers
  - fight against terrorism
- States may have bilateral nuclear cooperation agreements
- Nuclear Suppliers Group (NSG) – informal agreement – unilateral commitment by Participating Governments to adopt laws according to the agreement:
  - lists of nuclear and dual use items
  - requirement for physical protection measures
  - notification to IAEA Director General, dissemination to all IAEA Member States
  - Implementation through domestic law

Nuclear Suppliers Group





# UN Security Council Resolution 1540

- 2004 – declared the proliferation of weapons of mass destruction (WMD) (nuclear, chemical, biological) “a threat to international peace and security”
- Made the consensus export control regimes (e.g., NSG) a binding international obligation on all Member States
- Refrain from supporting non-State actors re: weapons of mass destruction (WMD) (Art 1)
- Adopt and enforce laws to prohibit non-State actors re. WMD (Art 2)
- Take and enforce effective measures to establish domestic controls to prevent proliferation (Art 3)





# Nuclear Third-Party Liability – The Principles

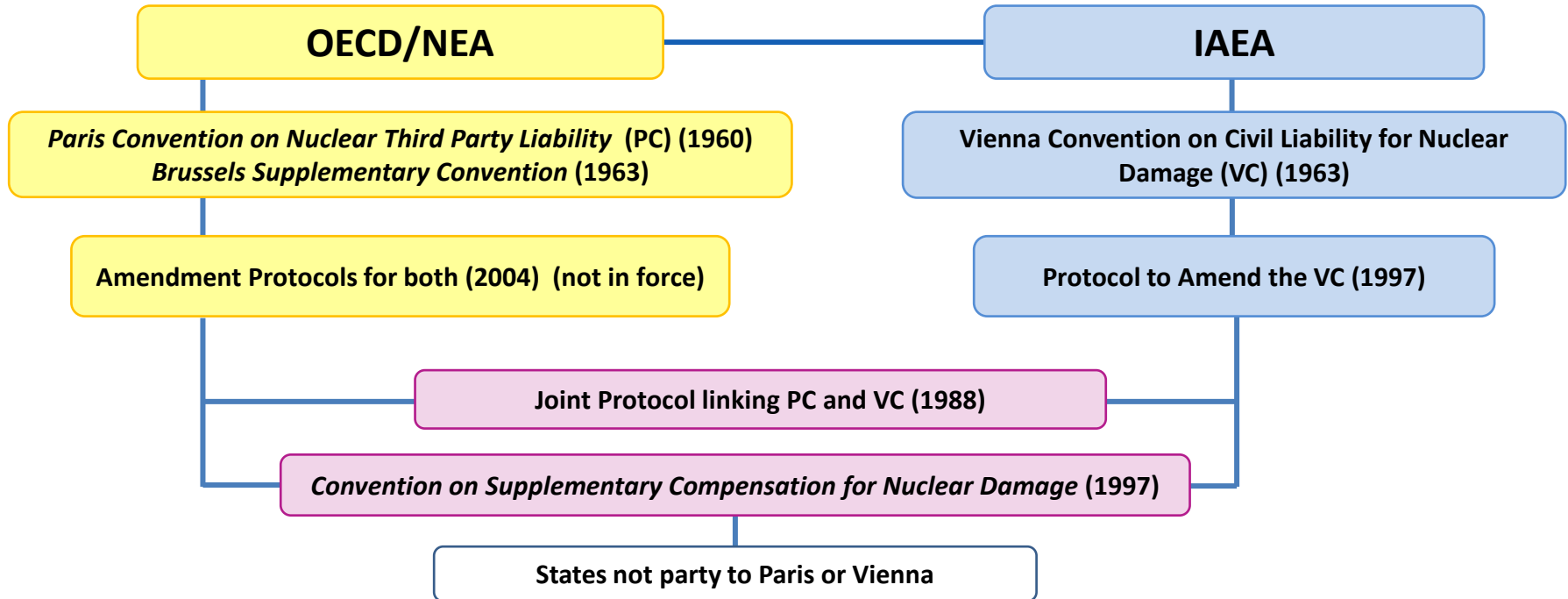
- Exclusive liability of nuclear operator
- Liability without fault (strict liability)
- Mandatory financial coverage (insurance)
- Operator's liability is limited in amount and time
- Non-discrimination
- Exclusive jurisdictional competence

Example:

Canada's *Nuclear Liability and Compensation Act*



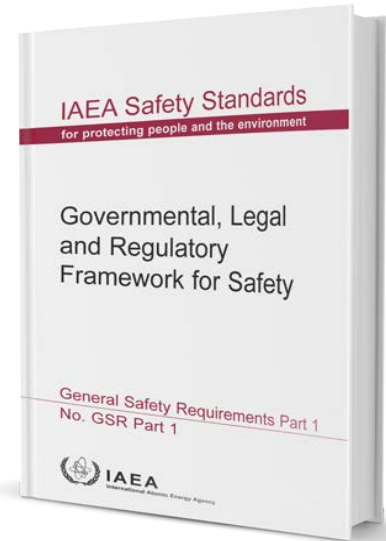
# Nuclear Liability – International Instruments





# International Law Requirements for National Regulatory Framework

- **IAEA's Governmental, Legal and Regulatory Framework for Safety** (GSR Part 1)
- **Convention on Nuclear Safety**, article 8:
  - *Each Contracting Party shall establish or designate a regulatory body ...with adequate authority, competence and financial and human resources to fulfill its assigned responsibilities.*
  - *Each Contracting Party shall take the appropriate steps to ensure an **effective separation** between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.*





# International Law Requirements for National Regulatory Framework (cont'd)

- **Joint Convention, article 20:**
  - *Each Contracting Party shall establish or designate a regulatory body ...with adequate authority, competence and financial and human resources to fulfill its assigned responsibilities.*
  - *Each Contracting Party, in accordance with its legislative and regulatory framework, shall take the appropriate steps to ensure the **effective independence** of the regulatory functions from other functions where organizations are involved in both spent fuel or radioactive waste management and in their regulation.*





# How is International Nuclear Law Implemented?

- There is no international nuclear overseer/regulatory body
- International organizations – UN, IAEA, NEA, for example – seek consensus on issues of global importance
- Some specific enforcement authorities exist – e.g., IAEA Board of Governors can report non-compliance with Agency safeguards to UN Security Council (UNSC) (IAEA Statute, art. XII.C); UNSC has authority to pass resolutions binding all Member States
- Much substance is left to peer review/influence – eg. *CNS*, *Joint Convention*
- Nuclear regulation is national law
- States make nuclear laws within their sovereign jurisdiction that reflect the international law to which they have agreed to be bound, and which also reflect national policies and considerations



# Canada's International Commitments

## **Nuclear safety:**

- *Convention on Nuclear Safety + Vienna Declaration on Nuclear Safety*
- *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*
- *Convention on Early Notification of a Nuclear Accident*
- *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*
- *Convention on Environmental Impact Assessment in a Transboundary Context (Espoo) and Protocol*
- *IAEA Regulations for the Safe Transport of Radioactive Materials*

## **Nuclear Security:**

- *Convention on the Physical Protection of Nuclear Material and Amendment*
- *International Convention on the Suppression of Acts of Nuclear Terrorism*
- *Code of Conduct on the Safety and Security of Radioactive Sources*

## **Non-Proliferation and Safeguards:**

- *Treaty on the Non-Proliferation of Nuclear Weapons*
- *Canada - IAEA Comprehensive Safeguards Agreement and Additional Protocol*
- *UNSC Resolution 1540 (non-proliferation of WMD)*

## **Nuclear Third Party Liability:**

- *Convention on Supplementary Compensation for Nuclear Damage*

**Canada is part of many bodies which include commitments: UN, IAEA, OECD/NEA, Zangger Committee, Nuclear Suppliers Group, etc.**

**Canada also has many bilateral agreements with states and multilateral agreements with international organizations.**



# Canada's Primary Nuclear Laws

## *Nuclear Safety and Control Act*

- CNSC – nuclear regulatory body, powers

## *Nuclear Liability and Compensation Act*

- Nuclear third party liability

## *Nuclear Fuel Waste Act*

- Long-term management/disposal of spent fuel

## *Nuclear Energy Act*

- Nuclear energy R&D; executive powers re. development

Canada implements its international commitments also through

*Criminal Code, Canadian Environmental Assessment Act 2012, Transportation of Dangerous Goods Act, Export Import Permits Act, Special Economic Measures Act, environmental protection statutes, etc.*





# Canada's Regulatory Framework

- Regulates the use of nuclear energy and substances to protect health, safety, security and the environment
- Implements Canada's international commitments on the peaceful uses of nuclear energy
- Disseminates objective scientific, technical and regulatory information to the public

## *Nuclear Safety and Control Act*





# Commission Hearing Process





# How the CNSC Works

## Commission

- Up to seven permanent members, appointed for fixed term, removable only for cause
- One permanent member named as President/CEO; members are experts in their fields

## Commission decision making

- Regulation-making authority – implementing international and national standards
- licensing of major facilities (nuclear power plants, fuel cycle facilities, mines) – public hearing process
- Enforcement – licensing, emergency orders
- Review/appeal of licensing matters, compliance/enforcement decisions
- Decisions subject to judicial review only by Federal Court



# CNSC: Our Organization

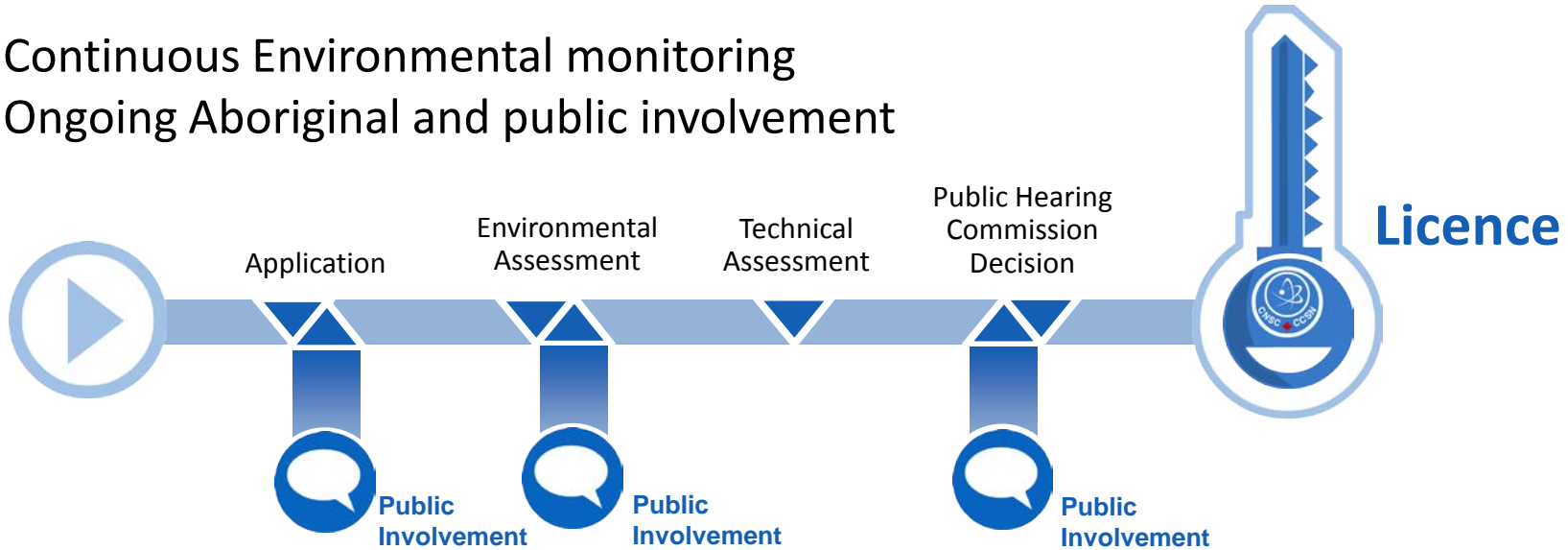
The CNSC has a staff organization of over 850 employees

- HQ in Ottawa, 4 site offices at power reactor sites, 1 site office at Chalk River Laboratories, 4 regional offices
- Roughly 2,500 licences to administer
- Compliance verification, inspection, enforcement activities
- Maintenance of Commission's regulatory framework  
(1 sets of regulations, regulatory documents, guides, etc.)



# CNSC's Licensing Process

- Continuous Environmental monitoring
- Ongoing Aboriginal and public involvement



**...ensures only qualified applicants are Licensed**





# Current Topics in Nuclear Law

- Effectiveness of international nuclear law instruments post Fukushima – improving accountability and transparency
- Progress toward a global nuclear liability regime
- The role of social acceptability
- Regulatory bodies and their oversight – peer review, transparency



# Nuclear Law Resources



[IAEA Handbook on Nuclear Law, volumes I and II](#)



[IAEA Safety Standard Series – Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements Part 1 \(GSR Part 1\)](#)



[OECD/NEA Nuclear Law Bulletin](#)



[OECD/NEA Nuclear Legislation in OECD & NEA Countries](#)



[Summary Report – 7<sup>th</sup> Review Meeting of the Contracting Parties to the CNS](#)



[Summary Report – 6<sup>th</sup> Review Meeting of the Contracting Parties to the Joint Convention](#)



# Questions?

# Thank You!



**nuclearsafety.gc.ca**

