



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

65 Years of Nuclear Safety



Michael Binder

President, Canadian Nuclear Safety Commission

CNS 2011 Waste Management, Decommissioning and
Environmental Restoration of Canada's Nuclear Activities

September 12, 2011 - Toronto, Ontario

65TH ANNIVERSARY
65^E ANNIVERSAIRE

Canadian Nuclear Safety Commission

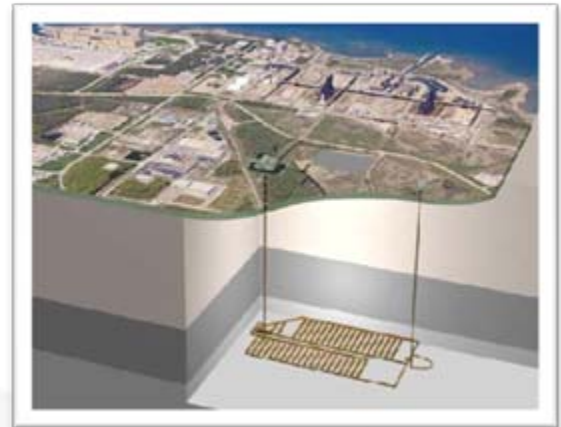
Regulates the use of nuclear energy and materials to protect the **health**, **safety** and **security** of Canadians and the **environment**; and to implement Canada's **international commitments** on the peaceful use of nuclear energy.

Canada's nuclear watchdog



CNSC Regulates All Nuclear-Related Facilities and Activities

- 🇨🇦 Uranium mines and mills
- 🇨🇦 Uranium fuel fabricators and processing
- 🇨🇦 Nuclear power plants
- 🇨🇦 Waste management facilities
- 🇨🇦 Nuclear substance processing
- 🇨🇦 Industrial and medical applications
- 🇨🇦 Nuclear research and educational
- 🇨🇦 Export/import control



...From Cradle To Grave

Fukushima-Daiichi Nuclear Power Plant

March 11, 2011

Earthquake and tsunami struck

- Efforts continue to control situation
- Raised a number of issues

CNSC took action

- Emergency Operations Centre activated
- Coordinated with federal agencies
- Issued order to all major nuclear facilities
 - Review lessons learned
 - Re-examine safety cases
 - Take action and report

A Wake-up Call For The Nuclear Sector

CNSC Response

🍁 **CNSC Internal Task Force**

- Industry submissions to 12(2)
- Safety Review Criteria (Canadian "stress tests") issued in June 2011
- Report to the Commission Aug 10, 2011
- Recommendations by Sept 2011

🍁 **IRRS Review Follow-Up Mission**

- Includes assessment of Canada's response to Fukushima – Nov 2011

🍁 **CNSC External Advisory Committee Review – March 2012**

🍁 **Ongoing CNSC Web updates**



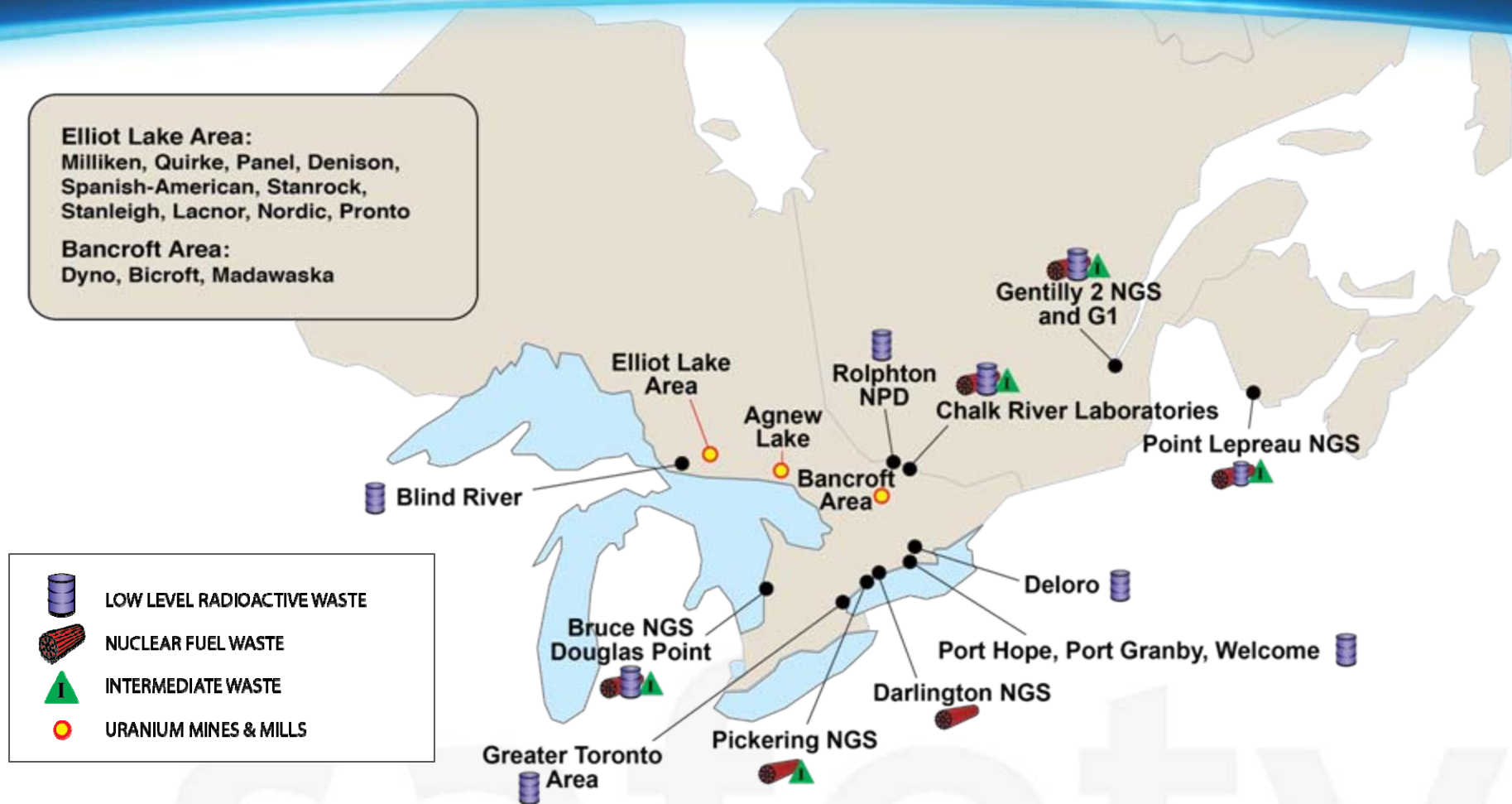
Transparent Process

The Fukushima Incident - Implications

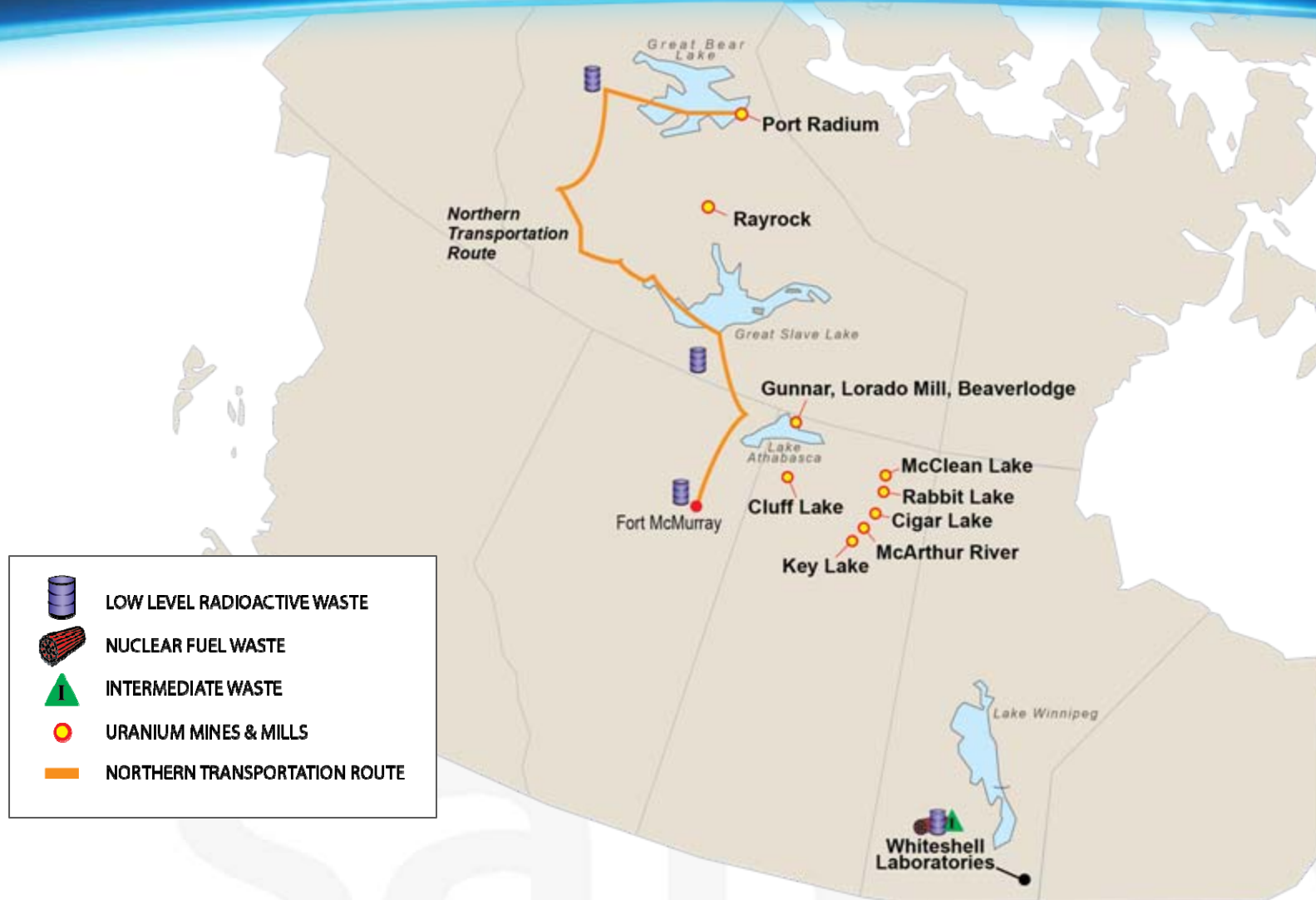
- 🍁 Spotlight on the nuclear industry
- 🍁 Public confidence waning
 - Need to work harder to demonstrate safety record
- 🍁 Raising questions about spent fuel bays
 - From wet to dry – a matter of timing

***Must reassess everything
nuclear including waste***

Radioactive Waste in Eastern Canada



Radioactive Waste in Central and Western Canada



Canada's Legislative Framework

- 🇨🇦 *Nuclear Fuel Waste Act (2002)*
- 🇨🇦 *Nuclear Safety and Control Act and regulations (2000)*
- 🇨🇦 *Canadian Environmental Assessment Act (1992)*
- 🇨🇦 *Nuclear Liability Act (1985)*

Strong foundation for safe management of nuclear waste



The Players

- NRCan** - Policy Framework for Radioactive Waste Management (1996)
- CNSC** - Regulations and oversight
- OPG** - DGR for low and intermediate waste
- NWMO** - Adaptive Phased Management for spent fuel waste
- AECL/LLRWMO** - Port Hope clean-up
- Provinces** - Legacy waste projects
- IAEA** - International standards and Joint Convention
- Industry** - NPPs, research, uranium mines and facilities, etc.

Requires close cooperation and collaboration

CNSC Regulatory Role

CNSC ensures that licensees meet their obligations by:

- establishing the regulatory requirements
- verifying these requirements are being implemented
- enforcing these requirements

As per Regulations and our regulatory documents

- P-290 - Policy of Radioactive Waste (2004)
- G-320 - Assessing the Long term Safety of Radioactive Wastes (2006)
- CSA - Standards

Further Clarity is Required . . .

Our Future Agenda on Waste Management

- ✿ RD-370, Management of Uranium Mine Waste Rock and Mill Tailings (now in consultation; from August 10 to September 26, 2011)
- ✿ Information Document on the Licensing of Geological Repositories (to be published by December 2011)
- ✿ Discussion paper on Radioactive Waste and Decommissioning Regulations (2012)
- ✿ RD/GD-368.6 - Siting of a Geological Repository (2013)
- ✿ RD/GD Radioactive Waste Management Programs - will replace P290 (2013)
- ✿ GD-320 (Revision) Assessing the Long-Term Safety of Radioactive Waste Management (2014)
- ✿ RD/GD Guide on Post-Closure of a Geological Repository (2015)

Modernizing our Regulatory Framework

CNSC Regulatory Expectations regarding Waste Management

3 R's -International best practices must be met

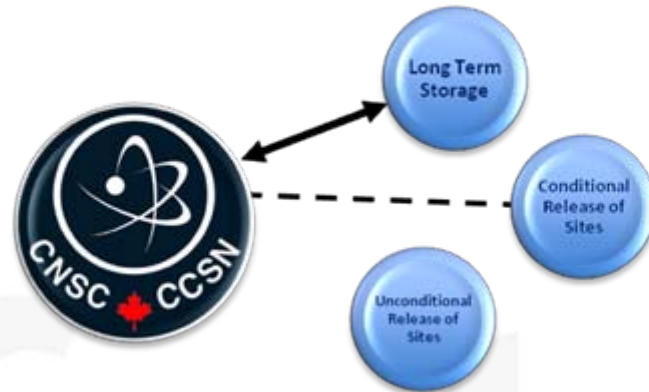
- Some of the strategies to minimize volume of radioactive waste include:
 - reusing and recycling by separating radioactive components from non-radioactive ones
 - preventing contamination of materials by limiting amounts in radioactive areas
 - assessing technology advances in waste minimization
- Methods used must always ensure that the health and safety of persons and the environment are protected



Reduce, Reuse, Recycle

Updating CNSC Policy Framework for Nuclear Waste

- ✿ Regulatory oversight - risk-informed & best use of CNSC resources
- ✿ Recognize other competent authorities (Provinces, etc) - let them oversee where appropriate
- ✿ Faster remediation of legacy sites
- ✿ “Tuning up” Environmental Assessments - more effective and efficient
- ✿ New concepts from the CNSC
 - clarity is the end game:
 - Unconditional Release
 - Conditional Release
 - Long Term CNSC Oversight



The End Game for Nuclear Waste?

Unconditional Release

- All waste is removed or cleaned up to below exemption levels
- No regulatory oversight is required
- CNSC could reassume responsibility based on new evidence
- Replacing 'abandonment'
- Examples include:
 - Post decommissioning of Dalhousie University Slowpoke Reactor
 - University of Toronto Slowpoke

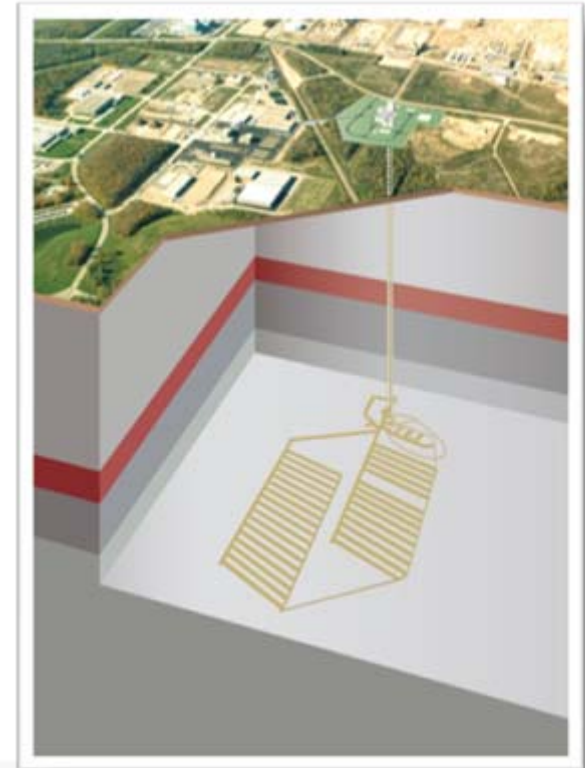
Conditional Release

- ❖ Waste is in a stable form but requires some on-going monitoring or land-use control
- ❖ Institutional controls are applied in order to be released from CNSC regulatory oversight
- ❖ Replacing 'exemption'
- ❖ Examples include:
 - Port Radium, NWT, currently under licence to Aboriginal Affairs and Northern Development Canada
 - Portions of decommissioned Beaverlodge mine site - oversight by the Province of Saskatchewan
 - Deloro, Ontario, currently under licence to the oversight of the Ontario Ministry of Environment



Long Term CNSC Oversight

- For waste repositories that require long-term monitoring to ensure stability
- Sites will remain under CNSC regulatory oversight for the foreseeable future
- Examples include:
 - Deep Geologic Repository – low and intermediate-level radioactive waste
 - NWMO Adaptive Phase Management – Deep Geological Repository for Used Nuclear Fuel



Looking Ahead – Issues Regarding Waste Management

- ✳ Waste repositories
- ✳ Transportation of waste
- ✳ Tailings management
- ✳ Financial guarantees
- ✳ Spent Fuel Bays - Waste storage under the microscope post-Fukushima
- ✳ Public engagement
 - Community outreach
 - Aboriginal consultation
 - Social acceptability – Industry’s role
 - Communication of risk – readily available objective and scientific information



In Looking to the Future, We Must Not Forget the Past!

The Presidents

Andrew G.L. McNaughton	Chalmers J. MacKenzie	George C. Laurence	Donald G. Hurst	Alan Prince	Jon H. Jennkens	René J. Lévesque	Agnes J. Bishop	Linda J. Keen	Michael Binder
1946-1948	1948-1961	1961-1970	1970-1975	1975-1978	1978-1987	1987-1994	1994-2001	2001-2008	2008-Present

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**We Will Never
Compromise
Safety...**

...It's In Our DNA!



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