CNSC Engagement Through Environmental Protection Reviews

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The Canadian Nuclear Safety Commission

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

The CNSC Independent Commission

- Quasi-judicial administrative tribunal and court of record
- Responsible for making decisions regarding nuclear facilities

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Environmental Reviews of Nuclear Facilities

Impact Assessment Act (IAA) 2019

- Integrated Impact assessments (IA) as per IAA
- Federal lands assessments a per IAA

Canadian Environmental Assessment Act, 2012 (CEAA 2012)

- Environmental Assessments (EA) as per CEAA 2012

**Repealed in 2019 and replaced by the IAA*

Nuclear Safety and Control Act (NSCA)

- Environmental protection reviews (EPR)

Provincial legislation, territorial regimes or land claim agreements

- EAs or equivalent

Environmental Protection Review Reports

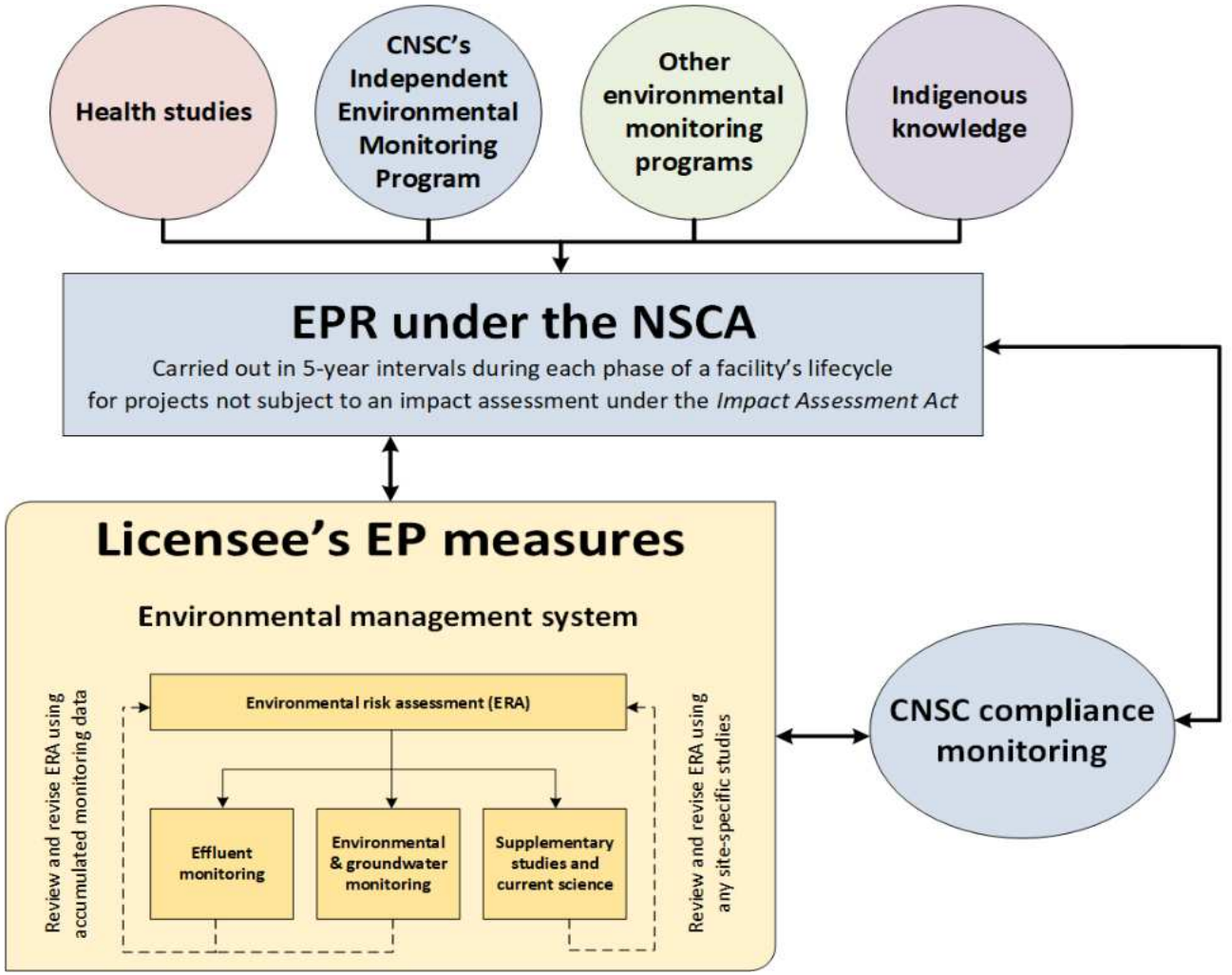
- Provides a summary of CNSC staff's evidence-based technical assessments
- Focuses on aspects relating to environmental protection, human health, and safety
- Assesses whether an applicant has met all relevant regulatory requirements for the proposed facility or project

Purpose of Our EPR Reports

- Increases transparency on CNSC staff's work
- Gives additional time for review of environmental information
- Highlights CNSC staff's comprehensive assessment
- Aligns with the CNSC's mandate of sharing scientific and technical information

EPR Report Framework and Inputs

- Overview of table of contents:
  - Introduction to the facility
  - Regulatory oversight
  - Releases to the environment and environmental effects
  - Environmental monitoring programs
  - Regional health studies
  - CNSC staff's findings



Adapting to Different Audiences

- Full EPR report (HTML and PDF formats)
- Executive summary
- EPR report pamphlet
- Social media posts

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Environmental Protection Review

The following is a summary of the Environmental Protections Review (EPR) for the Darlington Waste Management Facility (DWMF) located in the Darlington Nuclear (DN) site in Clarington, Ontario. EPRs are an evidence-based technical assessment conducted by the Canadian Nuclear Safety Commission (CNSC) staff, as required by the *Nuclear Safety and Control Act*.

Darlington Waste Management Facility

The DWMF is in the traditional territory of the Michi Saagiig Anishinaabe people. These lands are covered by the Williams Treaty between Canada and the Mississauga and Chippewa Nations.
The DWMF consists of two in-service storage buildings, a dry storage container processing building, and the Retube Waste Storage Building (RWSB). Releases from the DWMF are significantly lower than those from the nearby Darlington Nuclear Generation Station (DNGS) and emissions from the DWMF should be considered as a small fraction of the overall emissions and releases from the DN site as a whole.

Key Findings

Airborne Emissions ✓ | Waterborne Effluent ✓ | IEMP ✓ | Health Studies ✓

CNSC staff found that Ontario Power Generation (OPG) has implemented and maintained effective environmental protection measures to adequately protect the environment and the health of persons.

Scan to access the full report or find it at **nuclearsafety.gc.ca**

Indigenous Knowledge

The CNSC recognizes the importance of considering and including Indigenous knowledge in all aspects of the CNSC's regulatory processes, including in environmental protection reviews.

To find out more, visit the CNSC's Indigenous Knowledge Policy Framework

Effects to the Environment

CNSC staff reviewed OPG's assessment of current and predicted effects of licensed activities on the environment and health of persons in the 2020 environmental risk assessment for the DWMF.

Atmospheric Environment

OPG controls and monitors airborne emissions from the DWMF to the environment, including monitoring of both radiological and hazardous emissions. CNSC staff found that OPG's air emissions have remained below CNSC-approved licence limits and that the environment and public health remain protected.

Terrestrial and Aquatic Environment

There is no terrestrial or aquatic monitoring specific to the DWMF since releases from the DWMF are negligible. OPG has comprehensive site-wide aquatic and environmental monitoring programs that demonstrate that the terrestrial and aquatic environments around the DN site remain protected.

Human Environment

OPG monitors the environment surrounding the DN site to determine if there is an impact to human health through breathing the air, drinking and swimming in the water, and eating plants, fish, and wildlife from the area.

Annual public limit (µSv)	2017	2018	2019	2020	2021
1000	0.7	0.8	0.4	0.4	0.6

The estimated annual radiological doses shown above have remained below the regulatory annual dose limit for the public (1000 µSv). CNSC staff have found that impacts to human environment from radiological and hazardous substances released from the DWMF are negligible.

For questions, contact: ea-ee@cnsc-ccsn.gc.ca

Releases to the Environment

Hazardous and radiological substances have the potential to cause negative impacts to both humans and the environment. Release limits are established to ensure releases remain at levels protective of the environment and human health.

Airborne Emissions

Under normal operating conditions, there is a negligible potential for hazardous airborne releases. However, there is a small potential for radiological airborne emissions at the DWMF resulting from welding and vacuum drying activities. The DWMF has in place high-efficiency active ventilation systems to reduce these potential releases. OPG monitors the airborne emission data weekly and it has remained **significantly below** the applicable release limits from 2016 to 2021.

Waterborne Effluent

There are negligible liquid releases from operations of the DWMF. However, stormwater and foundation drainage[1] were monitored for tritium and gross gamma. The stormwater and foundation drainage are primarily influenced by air emissions from external facilities (such as tritium washout from the nearby DNGS).

The waterborne effluent of tritium and gross gamma in annual stormwater releases remained **significantly below** the administrative limits from 2016 to 2021.

[1] OPG monitored water collected by the drainage systems located along the foundation of buildings within the DWMF.

The exposure pathway

This figure illustrates a conceptual model of the environment around a generic nuclear generating station site (including a generic radioactive waste management facility) to show the relationship between releases (airborne emissions or waterborne effluent) and human and ecological receptors or exposure pathways.

Health Studies

The CNSC reviews health studies as an important component of ensuring that the health of people living near or working in the DN site are protected.

CNSC staff review:

- ✓ International radiation epidemiology reports
- ✓ CNSC's studies and scientific publications
- ✓ Provincial and national-level studies and reports

CNSC staff have not observed and do not expect to observe any negative health outcomes connected to the DN site and the DWMF.

CNSC Independent Environmental Monitoring Program (IEMP)

The IEMP is carried out by CNSC staff in publicly accessible areas and consists of taking samples from the environment and analyzing them for harmful substances released from facilities in all areas of the nuclear fuel cycle.

The IEMP results for 2021, 2017, 2015 and 2014 confirm that the public and the environment surrounding the DN site **remain protected**.

Results are consistent with the results submitted by OPG.

Scan to view the IEMP results or find them at nuclearsafety.gc.ca

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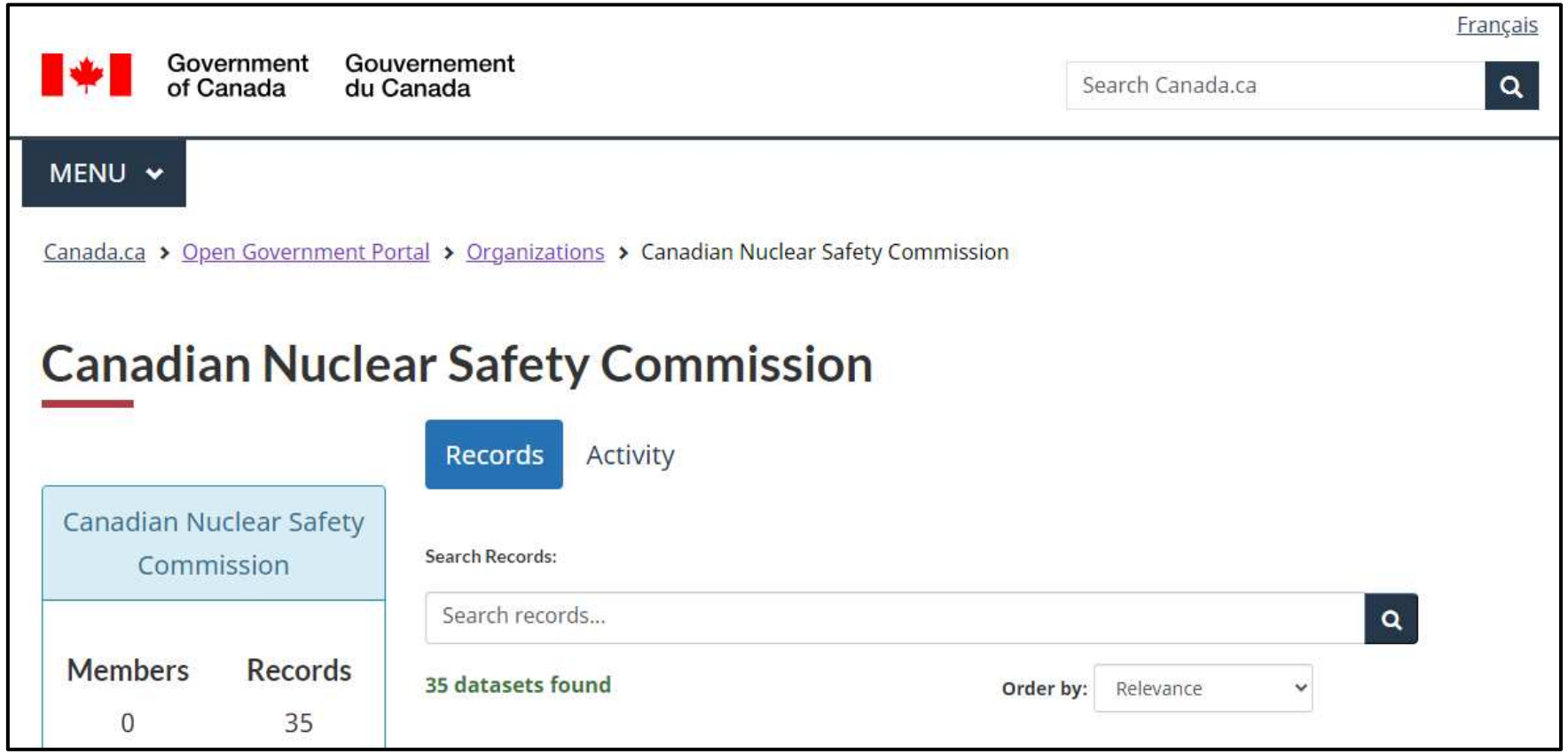
CNSC Open Government Portal

- Over 30 CNSC records (open information and open data)



Effectiveness of Our EPR Reports

- Great tool for outreach and engagement
- Referenced in interventions to the Commission
- Promotes transparency and builds trust

Indigenous Engagement

- Engagement associated with EPR inputs:
  - licensees' environmental risk assessment
  - the CNSC's Independent Environmental Monitoring Program
  - Indigenous-led monitoring programs
  - Indigenous Knowledge provided directly to the CNSC
- Engagement on EPR report findings
- Areas for continuous improvement

Future Considerations and Next Steps

- The CNSC is always looking for ways to improve our EPR reports:
  - Improved integration of Indigenous Knowledge
  - Broader dissemination of the EPR reports
- CNSC staff continue to strive to improve our engagement for EPR reports to keep in line with best practices and to promote transparency

Thank you!

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