Nuclear waste
An environmental justice perspective

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Public interest law organization, funded by Legal Aid Ontario

Core mandate is to provide access to justice, use and improve laws that protect human health and the environment
1. **Access to Environmental Justice**

CELA places high priority on cases and law reform work aimed at ensuring access to environmental justice; and

2. **Pollution Prevention and Public Health and Safety**

CELA places high priority on cases and law reform work aimed at ensuring safe, healthy and livable communities.
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1. Direct representation of eligible clients in proceedings in trial or appellate courts and before administrative tribunals
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We are Ontario’s only clinic providing environmental law legal aid services.
Today’s Focus

The Nuclear Waste Management Organization (NWMO) is looking for a location with local support, or a “willing host” for Canada’s radioactive waste.

• Who is involved and how can I have a say?
• What are the implications of the NWMO’s approach, specifically for those who are potential “hosts”?
• What does it mean, from an equitable and ethics perspective, to be “willing”?
• What’s next in the process?
Agenda

I. Canada’s Plans for Nuclear Waste
II. Roles and Jurisdiction
III. Public Involvement
IV. The International Community
V. Questions and Uncertainties
VI. How to Address Uncertainty
VII. Looking ahead

Questions & Discussion
I. Canada’s Plans for Nuclear Waste

Since the 1960s, nuclear reactors in Canada have been producing high-level nuclear waste in the form of used nuclear fuel bundles. These bundles are currently stored close to the facilities that produced them. **90,000** used fuel bundles are produced per year.

The Government of Canada, through the *Nuclear Fuel Waste Act*, assigned the **Nuclear Waste Management Organization** with the task and responsibility of managing used fuel produced at Canadian nuclear power plants.

In May 2010, the NWMO began its site selection process for a willing community to host a deep geological repository (DGR) used to store Canada’s used nuclear fuel.
I. Canada’s Plans for Nuclear Waste

Two potential sites remain under consideration for a Deep Geological Repository (DGR) for high-level nuclear waste disposal:

1. Northwestern Ontario - a site near Ignace
2. Southern Ontario - a site in the Municipality of South Bruce
## I. Canada’s Plans for Nuclear Waste

The NWMO initiates the siting process with a broad program to provide information, answer questions and build awareness among Canadians about the project and siting process. Awareness-building activities will continue throughout the full duration of the siting process.

### Step 1

Communities identify their interest in learning more, and the NWMO provides detailed briefing. An initial screening is conducted. At the request of the community, the NWMO will evaluate the potential suitability of the community against a list of initial screening criteria (outlined on page 30).

### Step 2

For interested communities, a preliminary assessment of potential suitability is conducted. At the request of the community, the NWMO will conduct a feasibility study collaboratively with the community to determine whether a site has the potential to meet the detailed requirements for the project. Interested communities will be encouraged to inform surrounding communities, including potentially affected Aboriginal communities and governments, as early as possible to facilitate their involvement.

### Step 3

For interested communities, potentially affected surrounding communities are engaged if they have not been already, and detailed site evaluations are completed. In this step, the NWMO will select one or more suitable sites from communities expressing formal interest for regional study and/or detailed multi-year site evaluations. The NWMO will work collaboratively with these communities to engage potentially affected surrounding communities, Aboriginal governments and the provincial government in a study of health, safety, environment, social, economic and cultural effects of the project at a broader regional level (Regional Study), including effects that may be associated with transportation. Involvement will continue throughout the siting process as decisions are made about how the project will be implemented.

### Step 5

Communities with confirmed suitable sites decide whether they are willing to accept the project and propose the terms and conditions on which they would have the project proceed.

The Proposed Process for Selecting a Site (Source: [NWMO](https://www.nwmo.ca))
I. Canada’s Plans for Nuclear Waste

<table>
<thead>
<tr>
<th>Step 6</th>
<th>The NWMO and the community with the preferred site enter into a formal agreement to host the project. The NWMO selects the preferred site, and the NWMO and community ratify a formal agreement.</th>
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</thead>
<tbody>
<tr>
<td>Step 7</td>
<td>Regulatory authorities review the safety of the project through an independent, formal and public process and, if all requirements are satisfied, give their approvals to proceed. The implementation of the deep geological repository will be regulated under the <em>Nuclear Safety and Control Act</em> and its associated regulations to protect the health, safety and security of Canadians and the environment, and to respect Canada’s international commitments on the peaceful use of nuclear energy. Regulatory requirements will be observed throughout all steps in the siting process. The documentation produced through previous steps, as well as other documentation that will be required, will be formally reviewed by regulatory authorities at this step through an Environmental Assessment and then licensing hearings related to site preparation and construction of facilities associated with the project. Various aspects of transportation of used nuclear fuel will also need to be approved by regulatory authorities.</td>
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<tr>
<td>Step 8</td>
<td>Construction and operation of an underground demonstration facility proceeds. The NWMO will develop the centre of expertise, launched in Step 4, to include and support the construction and operation of an underground demonstration facility designed to confirm the characteristics of the site before applying to regulatory authorities for an operating licence. Designed in collaboration with the community, it will become a hub for knowledge-sharing across Canada and internationally.</td>
</tr>
<tr>
<td>Step 9</td>
<td>Construction and operation of the facility. The NWMO begins construction of the deep geological repository and associated surface facilities. Operation will begin after an operating licence is obtained from regulatory authorities. The NWMO will continue to work in partnership with the host community in order to ensure the commitments to the community are addressed throughout the entire lifetime of the project.</td>
</tr>
</tbody>
</table>

The Proposed Process for Selecting a Site (Source: NWMO)
II. Roles and Jurisdictions

The **NWMO** is mandated to develop and implement a plan for managing Canada’s nuclear fuel waste pursuant to the *Nuclear Fuel Waste Act*.

The **CNSC** is responsible for issuing the necessary licenses for a potential deep geological repository (DGR).

The **Impact Assessment Agency of Canada** is responsible for conducting the environmental (impact) assessment of designated nuclear projects, including the DGR.

**Provincial** and **municipal** decision makers are responsible for laws of general application, local land use and by-law decisions.
II. ROLES AND JURISDICTION
What is the Role of Municipal Jurisdiction

- Municipal jurisdiction over nuclear power regulation is extremely limited
- Municipal land use planning may be overridden in case of a conflict due to constitutional rules of federal “paramountcy”
- Some municipal by-laws that apply to everyone equally may apply if they don’t affect nuclear industry operation directly or if they are not in conflict with the operator’s federal licencing
II. ROLES AND JURISDICTION
What is the Role of Indigenous Law

• There is an evolving landscape of application of Indigenous law
• Some law is being developed within the traditional courts system in Canada
• Other law is being recognized as rooted in longstanding indigenous legal traditions
• At the very least, section 35 of the Constitution and the case law interpreting that section is a constraining framework when a project is sited in one or more areas of indigenous traditional territory
II. ROLES AND JURISDICTION
What is the role of Provincial Jurisdiction?

- Even in areas of federal jurisdiction, the provinces and territories retain responsibilities and legal jurisdiction over a range of matters that pertain to “property and civil rights in the province” among other heads of power
  - An example is provincial jurisdiction over exploration drilling
  - Other examples could include permits to take water, permits for air pollution, land use planning, and minerals exploration
II. ROLES AND JURISDICTION
What is the role of Federal Jurisdiction

As between the provinces and territories and the federal government, jurisdiction over nuclear power and related activities is primarily federal. Nuclear power and related activities fall within federal jurisdiction by virtue of section 71 of the *Nuclear Safety and Control Act*, which provides that:

Any work or undertaking constructed for the development, production or use of nuclear energy or for the mining, production, refinement, conversion, enrichment, processing, possession, or use of a nuclear substance or for the production, possession, or use of prescribed equipment or prescribed information is declared to be a work or undertaking *for the general advantage of Canada*. 
II. ROLES AND JURISDICTION
What is the role of the NWMO?

• In 2002 the Nuclear Waste Management Organization was established by the nuclear energy corporations (Ontario Power Generation Inc., Hydro-Quebec and New Brunswick Power Corporation) under the *Nuclear Fuel Waste Act*.

• The NWMO, as an industry organization, is responsible under the Act for implementation of an approach to the long term management of Canada’s nuclear fuel waste (which it itself recommended to government, and which government then approved). They titled it “Adaptive Phased Management”.

• Thus, the owners of radioactive waste are responsible for the funding, organization, management, and operation of disposal and other facilities required for their waste.

• Concerns about the Act include the lack of transparency and accountability (despite much apparent transparency), the control by the nuclear industry of both the Nuclear Waste Management Organization and its advisory council, and the absence of a role for parliament.
II. ROLES AND JURISDICTION

Environmental (impact) assessment

- An impact assessment is a multi-staged, public proceeding which reviews a project against numerous factors, including:
  - the purpose and need for the project
  - cumulative effects of the project and related physical activities
  - alternatives to the project

An EA aims to:

- Lessen a project’s impacts, avoid and mitigate harm, and potentially improve social and ecological conditions
We need environmental (impact) assessment in order to:
(1) avoid, minimize, and prevent environmental harm from development
(2) prevent disproportionate impacts on vulnerable communities and ecosystems
(3) Provide a forum for the public’s voices
KEY PARTICIPANTS IN THE IMPACT ASSESSMENT SYSTEM

- Proponent
- Indigenous Groups
- Impact Assessment Agency of Canada
- Other Jurisdictions
- Review Panel
- Federal Authorities
- Minister
- Governor in Council
- Public

Source: Impact Assessment Agency of Canada
II. ROLES AND JURISDICTION
What is the role of the CNSC?

• The CNSC (Canadian Nuclear Safety Commission) was established in 2000 by the Nuclear Safety and Control Act, replacing the Atomic Energy Control Act.

• The obligation in the previous Atomic Energy Control Act to “promote” the use of nuclear power for peaceful purposes was removed.

• There are still issues about sufficient independence from industry, and continued reporting to the same federal Minister responsible for promoting nuclear power despite longstanding calls from civil society for this to be remedied.
II. ROLES AND JURISDICTION

The CNSC and the *Nuclear Safety and Control Act*

- The CNSC is Canada’s nuclear regulator
- Among its powers, it can issue operating licences for nuclear facilities, like nuclear power plants
- In making a licensing decision, it must conform to the:
  - **Purposes** of the *Nuclear Safety and Control Act* (section 3)
  - **Objects** of the Commission set out in the NSCA to (1) prevent unreasonable risk to human health and the environment, (2) conform with international obligations and (3) disseminate public information (section 9)
  - **Licensing** parameters, requiring that the licensee will (1) make adequate protection for human health and the environment and (2) maintain conformance with international obligations (section 24)
II. ROLES AND JURISDICTION
CNSC Licensing & the Nuclear Sector

III. PUBLIC INVolVEMENT
What does credible public involvement look like?

CELA endorsed the following principles developed by the national ENGO EA caucus in our brief to the federal government in December 2016 (See Lindgren: http://www.cela.ca/sites/cela.ca/files/CELA-Submissions-Expert-Panel.pdf):

- Participation begins early in the planning and decision-making processes, is meaningful and builds public confidence;

- Public input can influence or change the outcome/project being considered;

- Opportunities for public comment are open to all interested parties, are varied, flexible, include openings for face to face discussions and involve the public in the actual design of an appropriate participation program;

- Formal processes of engagement, such as hearings and various forums of dispute resolution, are specified and principles of natural justice and procedural fairness are considered in formal processes;

- Adequate and appropriate notice is provided;
III. PUBLIC INVOLVEMENT
What does credible public involvement look like? (con’t)

• Ready access to the information and the decisions at hand is available and in local languages spoken, read, and understood in places potentially affected by proposed undertakings;

• Participant assistance and capacity building is available for informed dialogue and discussion;

• Participation programs are learning oriented to ensure outcomes for all participants, governments, proponents and participants;

• Programs recognize the knowledge and acumen of the public; and,

• Processes are fair and open in order for the public to be able to understand and accept decisions.

III. PUBLIC INVOLVEMENT
Findings of the Expert Panel on EA Processes

- The Panel stated:
  - “Public trust and confidence is crucial to all parties. Without it, an assessment approval will lack the social acceptance necessary to facilitate project development. While some would likely favour the NEB and CNSC for the assessment of projects in their particular industries, the erosion of public trust in the current process has created a belief among many * that the outcomes are illegitimate. This in turn has led some to believe that the outcomes are preordained and that there is no use in participation in the review process because views will not be taken into account. The consequence of this is a higher likelihood of protests and court challenges, longer time frames to get to decisions, and less certainty that the decision will actually be realized – in short the absence of a social licence. On the other hand, if there is trust in the authority conducting the IA, the outcome is more likely to be considered fair and thus be accepted by all parties, even if their particular positions do not win the day. As such, an authority that does not have concurrent regulatory functions can be better held to account by all interests than can entities that are focussed on one industry or area and that operate under their own distinct practices.” (Section 3.1 of the Panel report – emphasis added)
IV. What is the Role of the International Community
The International Agreement on Used Fuel Waste

• The 1997 Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management was ratified by Canada in 1998 and in force in 2001
• Defines “disposal” as the “emplacement” of used fuel or radioactive waste without the intent of retrieval
• Requires contracting parties to ensure that society, the environment, and individuals are “adequately protected” against radiological hazards
• The Convention aims to avoid imposing “undue” burdens on future generations
• Uses language like “suitable measures”, “adequately protected”, “reasonably practicable improvements {e.g. to existing facilities}
• Generation of radioactive waste to be kept to the “minimum practicable”
• Provides that radiation exposure to workers and the public be kept “as low as reasonably achievable, economic and social factors taken into account”
IV. What is the Role of the International Community
IAEA guidance for consulting public on radioactive waste

• IAEA Guidance also provides some benchmarks against the current Canadian nuclear waste processes

• The IAEA Guide, *Policies and strategies for Radioactive Waste Management* (IAEA 2009) provides that a State should “indicate the State’s intention to inform the public about proposed plans for radioactive waste management, and to consult concerned parties and members of the public to aid in making related decisions.”

• Among the goals of the IAEA guidance is “To enhance public confidence in relation to the subject of spent fuel and radioactive waste management.”

• The IAEA Guide elaborates: “Public participation in decision making: Decisions which may have a potential health, social or environmental impact should be made in consultation with those who may be affected (the regional Aarhus Convention [6])”
IV. What is the Role of the International Community

IAEA guidance for consulting public on radioactive waste

• The proponents’ and reactor operators’ stake in public involvement is also implied in the guide as follows”

“10.7. PUBLIC SENSITIVITY Public attitudes and expectations in relation to the potential construction of radioactive waste management facilities should be understood and addressed. Experience in many countries has shown that transparency and openness by the developer in relation to plans that may affect local communities offer the best chance of success. An important aim should be to gain the confidence and good opinion of the local community [42]. These are important aspects to take into account when developing and implementing strategies for radioactive waste management.” (page 38 of the Guide)

• This accords with CELA’s oft-repeated submissions in other contexts such as emergency planning, that without adequate public consultation, and meaningful input that has clearly made a difference in decision making, there will be no public credibility in the outcomes
V. Questions and Uncertainties

Typical community concerns regarding hazardous materials siting decisions apply also to nuclear fuel waste siting:

- What kind of hazard or danger could be present
- Who could be impacted
- How could the hazard occur
- What are the pathways
- What are the potential health effects if things go wrong
- What can be done to prevent the hazard
- How can the situation be controlled if things go wrong
- How can members of the public be confident in the answers they are provided
V. Questions and Uncertainties
What are the Key Areas of Uncertainty related to used nuclear fuel and deep repositories

• the properties of the fuel over such incredible time frames;
• the behaviour of the geological formations;
• the possibility of cataclysmic events;
• the ability of human technology to withstand environmental pressures over decades much less thousands and hundreds of thousands of years
V. Questions and Uncertainties

What are the Key Areas of Uncertainty related to used nuclear fuel and deep repositories

- Ability to develop technology which could be controlled, managed, monitored and kept isolated from human and natural environments over hundreds of thousands of years is in doubt
- Intractable issues include communication issues, technology maintenance, follow up and monitoring issues
V. Questions and Uncertainties

Types of waste

• A used nuclear fuel waste site may involve additional fuel from new reactors but the decision to pursue new nuclear power has so far been at the Ontario cabinet table.

• There are efforts to research and license “Small Modular Reactors” which could introduce new types of fuel, with different hazards, different non-proliferation risks, and different management and safety requirements.

• For example, the CANDU fuel is not enriched; but some of the SMR proposals anticipate use of enrichment processes.

• In addition to type of waste, size of the project and volumes could also change (such as occurred during the low and intermediate DGR hearing in Kincardine).

• Is it possible the project could also encompass intermediate level waste?
V. Questions and Uncertainties

Source of wastes – trade issues

• If repository is developed, will there be a basis to refuse fuel waste from elsewhere even though NWMO says it will take fuel waste from Canada only?

• In the case of other domestic and hazardous waste handling in North America for example, waste is traded across borders and there are doubts about the legal ability to restrict this trade in North America under NAFTA, and perhaps beyond, under other bilateral trade agreements that have been negotiated or are in progress.
V. Questions and Uncertainties

Need for extra consideration of impact on Indigenous people’s due to prior history and in light of the finding of the UN Rapporteur

• CELA recently hosted the UN Rapporteur on human rights and toxic’s Indigenous engagement session (at the request of Indigenous leaders) during his visit to Canada. His recently released end of country visit and interim report found “Canada’s inaction on toxic exposure a disturbing sign of discrimination”.  

• Throughout the lifecycle and value chain of economic activity in Canada, indigenous peoples appear to be disproportionately located in close proximity to actual and potential sources of toxic exposure. Indigenous peoples live next to refineries and other manufacturing facilities. Existing and proposed pipelines crisscross their lands. Landfills, incinerators and other waste disposal sites are often closest to their reserves. This proximity and issues of access to justice and remedy (further below) raise questions of dignity and equality.”

V. Questions and Uncertainties

What is the size of the problem?

• The NWMO found that used fuel waste from nuclear generating stations will have to be managed for hundreds of thousands of years, and only after one million years will it approach the radioactivity levels of natural uranium – this is even longer if other forms of nuclear power generation are pursued.
V. Questions and Uncertainties

What are Some Remaining Ethical and Moral Issues?

- We are continuing production of toxic radioactive waste that will remain highly dangerous over millennia for fleeting current energy needs.
- There is an issue of avoidance of full liability and accountability for accidents.
- Siting fuel waste in northern communities based on “economic” arguments raises major question of environmental equity.
- Access to information remains a major problem.
VI. How do you address these questions?  
Some guiding principles

1. Environmental justice  
   • Its meaning and value in decision-making

2. The concept of a willing host  
   • Its definition and ethical perspectives
VI. Environmental Justice

The Principle

Environmental benefits and burdens should be equitably distributed among all persons, rather than allowing the majority of adverse impacts to be unfairly imposed upon visible minorities, Indigenous and/or marginalized communities.

- The practical difficulties for member of the public to engage, the complexity and time-consuming nature of participation serve as significant barriers to environmental justice

- Environmental justice is the idea that when everyone can meaningfully participate, no group should be affected inequitable by a decision
VI. Environmental Justice

Your Rights

The environmental justice principle has a number of procedural dimensions, including:

- **Right to participate** Everyone must have an opportunity to meaningfully participate in all aspects of governmental decision-making that may affect their health or environment.

- **Right to know** Everyone must have full and timely access to information that is being used for decision-making purposes.
VI. Environmental Justice

Why Participate?

- Enhances the democratic legitimacy of decision making
- Leads to greater accountability and effectiveness in decision making
- Is an effective means through which local concerns, values, and knowledge can be raised
- Leads to outcomes better suited to the needs and interest of a community.
VI. Environmental Justice

Who are the right “affected public” and the right “decision makers”?

An essential question is how the affected public is defined

• Are the people being consulted the ones who would be most impacted
• Are Indigenous and treaty rights being respected
• Are all of the affected communities being consulted (e.g. transportation route communities)
• What is the geographic definition of the impacted community and environment

Also of critical importance is the question of who is making the decision on behalf of the community – and which community
VI. The “Willing Host” Concept

According to the NWMO

NWMO’s “Guiding Principles” (2021) sets out most recent and accessible definition:

“Informed and Willing Host Community: The host community, the local geographic community in which the facility is to be located, must be informed and willing to accept the project. The local community must have an understanding of the project and how it is likely to be impacted by the project. As well, the local community must demonstrate that it is willing to accept the project.”
VI. The “Willing Host” Concept

According to the NWMO

The NWMO’s references to “willingness” and “community” have gradually decreased in their reports. Preliminary questions proposed in earlier reports from the early and mid-2000s remain unaddressed.

Various ethical frameworks and justice principles can be used as guidance by communities when discussing whether or not they are truly “willing”.

Communities can rely on ethical frameworks to question impacts on rights, justice and equity and whether threshold of “willingness” has been met.
VI. The “Willing Host” Concept
An Ethical Perspective

• Vilhunen et al (2017): “more empirical research on how lay people perceive ethical issues related to community acceptance of a [nuclear fuel] repository is needed in order to better understand the ethical issues at local level.”

• Important to understand the justice or ethical issues at hand; “particularly given the risks of a local community inherently trusting the engagement process without questioning.”

No Canadian case law definitions of “willing host” or similar concepts specific to high-level waste. Case law focused on Indigenous consultations, and consent mainly focused on the duty of care context, eg: doctor-patient.
VI. The “Willing Host” Concept

What influences “willingness”?

1. **Nuclear Stigma** - effect on reputation (tourism, agricultural sectors)
2. **Nuclear Culture** - power relationship between location, industry and society and how geographical remoteness, economic marginality and political powerlessness can lead to a culture of acceptance
3. **Regional Justice / Energy Justice** – disproportionate impacts on marginalized communities; equity of energy-related decisions
4. **Coercion and Consent** – perception of benefit
5. **Compensation** – for living next to a radioactive waste site
6. **Community Perception of Justice / Social Acceptance** - includes procedural and distributive justice, dimensions of trust
VII. Looking Ahead

**Willingness determinations**
- Who is included? Who is left out?
- How does this play into future steps in the process?
- Are environmental rights (right to participate, right to know, right to information) protected?

**Environmental impact assessment**
- What are the information gaps? What remains unknown? (ie. sources of waste, types of fuel)
- What happens in the event of an accident or malfunction?

**Nuclear licensing**
- This is an operational, regulatory decision and so the larger decisions about site, host etc. have already been made
- The CNSC itself says it doesn’t have a strong role in site selection or nuclear policy
- This stage may occur may years in the future
Resources

- Nuclear Waste in Canada: [www.nuclearwaste.ca](http://www.nuclearwaste.ca)
- Canadian Environmental Law Association: [www.cela.ca](http://www.cela.ca) [https://cela.ca/nuclear-waste/](https://cela.ca/nuclear-waste/)
- Northwatch: [northwatch.org](http://northwatch.org)
- Nuclear Waste Watch: [http://nuclearwastewatch.ca](http://nuclearwastewatch.ca)
- Nuclear Information and Resource Service [https://www.nirs.org/](https://www.nirs.org/)
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