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# Supplementary Information
# Oral intervention

## Presentation from
## Pete Roche

In the Matter of

**Ontario Power Generation Inc.**

Proposed Environmental Impact Statement for OPG's Deep Geological Repository (DGR) Project for Low and Intermediate Level Waste

Joint Review Panel

**September 16 to October 12, 2013**

# Renseignements supplémentaires
# Intervention orale

## Présentation de
## Pete Roche

À l'égard de

**Ontario Power Generation Inc.**

Étude proposée pour l'énoncé des incidences environnementales pour l'Installation de stockage de déchets radioactifs à faible et moyenne activité dans des couches géologiques profondes

Commission d'examen conjoint

**Du 16 septembre au 12 octobre 2013**

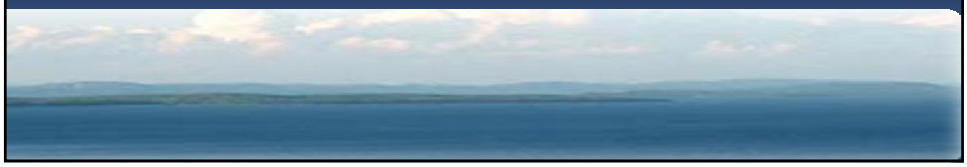
Canada

# Waste Packaging & Characterization

Pete Roche

**Prepared for Northwatch**

Review of Ontario Power Generation's Proposed Deep Geologic Repository for Low and Intermediate Level Nuclear Wastes



## The Story So Far

- **Questions remain which indicate a lack of fundamental understanding of the site.**
- **The claim that the repository will be essentially dry cannot be supported with any certainty**
- **Water may reach the radionuclides and carry them back to the surface.**
- **The failure of a single barrier could result in the failed performance of the repository.**
- **There is no assurance DGR will perform within the dose criteria as a multiple barrier system that provides defense-in-depth.**

## Packaging

- *"...in the postclosure safety assessment, the packaging is not credited with any barrier function, since the packages are not designed to provide any long-term isolation and containment of wastes."*
- OPG claims that the DGR does not require waste packaging to provide a barrier function

## International Consensus

- There appears to be broad technical agreement that engineered barriers can further limit radionuclide release and migration.
- In virtually every other country regulations require packaging and/or processing of waste to perform a barrier function; lower solubility, reduce or delay corrosion or reduce contact of waste with groundwater.

## Not a Precautionary Approach

- reliance on natural barriers relinquishes a confidence-building engineered barrier and unnecessarily throws away an important tool in the struggle to reduce the risks. It is not a precautionary approach.

## Basis for Long-Term Safety

- OPG's long-term safety is described by CNSC as:

"*Based on depth, natural and very low permeability barriers (no reliance on backfill or containers), and lack of circulating groundwater*".

## WIPP

- WIPP uses a similar concept but unlike DGR is required by the US Environmental Protection Agency to:

*"incorporate engineered barrier(s) designed to prevent or substantially delay the movement of water or radionuclides toward the accessible environment."*

## Packaging has an important safety function

- In UK packaging should contain:

*"…radionuclides within the package envelope for sufficient times to allow some radioactive decay processes to take place … waste packages will need to retain their safety function over periods of a few centuries or many millennia."*

## Radioactive Waste Management Cases

UK waste producers need to prepare "*radioactive waste management cases*" (RWMCs) to

- Demonstrate the safety of proposed conditioning and packaging method;
- Safety of packages during storage;
- Safety during transport;
- Safety during emplacement in a geological disposal facility;
- Safety during the post-disposal period.

## Container Lifetime

- In the UK Packages have to be manufactured to retain safety functions for storage and operational periods up to 500 years.
- This should ensure a good degree of containment for relatively short-lived radionuclides (e.g. Cs-137, Cs-134, Sr-90) which may be soluble in groundwater and could significantly contribute to the radiological risk in the biosphere.

## OPG Contrast

- In contrast OPG's containers only expected to maintain integrity to facilitate easy retrieval (if required) for a decade or so after emplacement.
- The majority of the contaminants associated with LLW are expected to be released quickly on contact with water,
- No attempt through the use of packaging criteria to ensure that contaminants remain in the repository until radionuclides have decayed to very low levels.

## EIS Guidelines

- OPG's failure to make use of packaging as an important safety tool is not only abandoning the precautionary principle
- but also a failure to meet the requirements of Section 11.2 of the EIS Guidelines because they have not discussed their decision to not apply extra barriers in the context of potential mitigation measures.
- *The proponent must indicate what other mitigation measures were considered (including the various components of mitigation) and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation must be justified.*