



Canadian  
Environmental Law  
Association  
EQUITY. JUSTICE. HEALTH.

# Comments to the Canadian Environmental Assessment Agency - Potential Conditions for the Deep Geologic Repository for Low and Intermediate Level Radioactive Waste Project

*Prepared on behalf of the Canadian Environmental Law Association  
by:*

*Tanya Markvart*

July 2015

## 1. Introduction

Our comments on the JRP's proposed conditions follow the approach that we took to evaluate OPG's EIS for the proposed DGR Project. Our analyses were framed by two guiding principles of the EA: sustainable development and the precautionary principle (see CEAA, 2009). These overarching principles provide a framework for analysis that situates long-term social, economic, and environmental wellbeing at the center of decision making. In previous submissions to the JRP, we identified where OPG failed to address these principles in the EIS, and we explained the approach that OPG should have taken to assess the proposed DGR Project in terms of the extent to which it would contribute positively to sustainability over the coming millennia (see Gaudreau et al., 2013; Markvart, 2014a; Markvart, 2014b).

In the sections that follow, we describe some key features of sustainability and precaution that the JRP's potential conditions ignore: long-term perspective, uncertainty, democratic process, and consideration of alternatives. We urge the Minister to serve the public interest by rejecting the proposed conditions and DGR Project on the basis of these and other serious inadequacies.

## 2. Long-Term Perspective

Adopting a long-term perspective is fundamental to sustainability-based decision making. It is essential to consider how the impacts of human undertakings will affect present and future gaps between the rich and poor, the decision-making capacity of government organizations, and the integrity of vital ecological and natural resource systems, among other sustainability concerns commonly employed in evaluations of large industrial projects (see Gibson et al., 2005).

The lifetime of the proposed DGR Project spans thousands of years. The JRP divides the temporal boundary of the DGR into preclosure and postclosure periods (see Joint Review Panel, 2015). The preclosure period includes site preparation and construction, operations and decommissioning. The postclosure period includes a period of institutional control followed by abandonment forever.

The long-term nature and accompanying uncertainties and risks of the proposed DGR Project should compel the Minister to consider whether or not and how the JRP and OPG have adequately considered its whole lifetime. In fact, the JRP's potential conditions focus primarily on site preparation, construction and operation stages, while decommissioning and abandonment stages require proper attention.

Below is a list of some key conditions for inquiry by the Minister, the responsible public authority at this late stage in the decision-making process:

- Subsection 4.6 (Fish and Fish Habitat): The condition that requires OPG to implement a follow-up monitoring to determine the effectiveness of the stormwater management system does not consider decommissioning and abandonment stages.
- Subsection 4.8 (Fish and Fish Habitat): The condition that asks OPG to develop a lake

whitefish follow-up program is unclear about the timeframe of the program, which should include all stages, especially decommissioning and abandonment.

- Subsection 8.3 (Health and Socio-Economic): The condition that obligates OPG to confirm the EA prediction of no adverse effects (for members of the public and Aboriginal groups) from exposure to radiation does not attend to operation, decommissioning and abandonment phases.
- Subsection 8.5 (Health and Socio-Economic): The condition that asks OPG to implement a detailed plan on how it would mitigate a scenario where intermediate-level waste containers fail in filled chambers while the DGR is still in operation fails to devote attention to decommissioning and abandonment stages.
- Subsection 8.6 (Health and Socio-Economic): The condition that requires OPG to develop a follow-up monitoring program for radon does not require monitoring during decommissioning and abandonment stages.
- Section 13 (Accidents and Malfunctions): Subsections 13.1, 13.2, 13.4, 13.5, and 13.8 focus primarily on the site preparation, construction and operation stages of the preclosure period, while giving little regard to decommissioning and postclosure.
- Section 14 (Climate Change): This section rightly addresses climate change, which implies a long-term timeframe; however, the conditions are not appropriately clear about the comprehensive timeframe that the climate change strategy should adopt.

By not incorporating an appropriately long-term timeframe in the above potential conditions, the JRP frees OPG of important obligations that should be in place throughout the lifetime of the proposed DGR project. Indeed, the conditions tend to rest on a fragmented view of preclosure and postclosure periods; they often assume that these periods are disconnected from each other as opposed to inextricably interconnected, with the potential to carry significant consequences long into the future.

### 3. Uncertainty

The precautionary principle is invoked in decision-making in the presence of uncertainty, notably with respect to the impacts of an undertaking on public health and the environment (see Benevides & McClenaghan, 2002). Throughout the EA process, serious uncertainties were exposed with respect to the performance and effects of various components of the proposed DGR Project (e.g., Duinker, 2013; Greening, 2014a; Greening, 2014b).

The JRP's potential conditions begin to require OPG to address some uncertainties. For example, many of the conditions ask for a follow-up program, including some form of monitoring in order to verify the accuracy of the EA and/or determine the effectiveness of certain mitigation measures.

But key potential conditions reveal critical gaps in OPG's understanding and consideration of the potential effects of the proposed DGR project, including the following:

- How OPG would mitigate a scenario where intermediate-level waste containers fail in filled

chambers while the DGR is still in operation, and anticipated exposures to the workforce if the rooms were completely filled, as well as during the period when the retrieval of containers would still be possible via planned access routes (see subsection 8.5).

- The behaviour of the tritium plume originating from the Western Waste Management Facility (see subsection 11.7).
- The predicted long-term stability of the solidified active liquid waste sludges and the potential release of liquids when exposed to conditions applicable to the DGR (see subsection 13.8).
- The probability for radiation exposures to humans and non-human biota for the Normal Evolution and Disruptive Scenarios (see subsection 13.9).
- The amounts and activities of discharges into Lake Huron (via the shallow and intermediate groundwater systems) for all variant cases of the Disruptive Scenarios (see subsection 13.10).
- How the environment/climate change may affect the proposed DGR Project (see subsection 14.1.2).

These critical gaps in understanding and consideration should have been addressed publicly by the JRP and OPG – before a decision was made by the JRP on the acceptability of the proposed DGR Project, and before the conditions were proposed. The information that may have emerged during the EA process around these components of the proposed DGR Project would have affected the independent analyses of public Intervenors as well as perhaps the JRP’s judgment about project effects. It is reasonable that the Minister can and should impose consequences on the JRP and OPG, given the late stage at which these important concerns have surfaced.

Additionally, significant ambiguities remain for the Minister to address, including the following:

- Subsection 13.6 (Accidents and Malfunctions): It is unclear whether or not the testing program with respect to postclosure containment of radionuclides and other contaminants requires mitigation measures that should bear on the preclosure period.
- Subsection 13.8: Similarly, it is unclear whether or not the results of the research on the predicted long-term stability of the solidified active liquid waste sludges, etc., require mitigation measures that should bear on the preclosure period.
- Subsection 13.9: Finally, it is unclear whether or not the results of the probabilistic calculations for radiation exposures to humans and non-human biota carry implications for mitigation measures and the preclosure period.

These ambiguities and gaps in understanding and consideration undermine the credibility and efficacy of the EA process, and the remaining (and considerable) uncertainty about long-term environmental impacts stands in sharp contrast to the precautionary principle. Given the high risks that accompany the management of long-lived radioactive waste, the JRP’s questionable approach is unacceptable to the public and would be appropriately addressed by a decision by the Minister to reject the proposed conditions and DGR Project.

#### **4. Democratic Process**

There is a widespread agreement among planning practitioners and thinkers that broadly inclusive and transparent decision-making processes contribute to greater sustainability; they provide a space for the consideration of both scientific and community-based knowledge, contribute to the capacity of communities to address public concerns, bring about more integrative and comprehensive approaches to problem solving, and help to ensure that the positive and negative impacts of projects are distributed more fairly (see Dryzek, 1987; Fung, 2006; Healey, 2006).

In section 3, above, we described six potential conditions that expose critical gaps in the JRP's and OPG's understanding and consideration of project effects. These six conditions also reveal a breach in democratic process in that they hand approval authority – based on an ambiguous 'satisfaction' qualification – over to the CNSC – without public input. This failure to maintain a broadly inclusive and transparent decision-making process runs throughout the conditions.

Indeed, though the conditions pertain to a diverse range of public interests associated with the lifespan of the proposed DGR Project, they provide only two openings for public input (see sections 4.8 and 8.2). Moreover, in subsection 2.2, where the JRP does set out some requirements for public consultation, it is unclear how the terms 'sufficient information' and 'reasonable period of time' should be interpreted. Given the authority invested by the JRP in the CNSC, it seems that these terms would be defined, later, by the CNSC alone.

Given the diverse range of public interests involved in every stage of the proposed DGR Project, it would be most prudent for the Minister to consider whether or not and how the JRP's conditions provide adequate avenues for public input. The public should at a minimum be invited to review and comment on OPG's annual report and all follow-up programs, management plans, and contingency plans required by the conditions. The public must have access to all of the information to which the CNSC has access in its review of OPG's fulfillment of the conditions. And the process by which the public can review, comment on, and access relevant information should be clearly defined by the conditions.

#### **5. Consideration of Alternatives**

The identification and comparative evaluation of alternatives and trade-offs is central to promoting sustainability (see Gibson et al., 2005). The consideration of alternatives and associated trade-offs in light of positive and negative effects on sustainability should provide the information and insights that are needed to select the best options. In previous submissions to the JRP, we explained the process by which the JRP and OPG should have assessed the relative contributions to sustainability of the alternatives to and alternative means of carrying out the proposed DGR Project (see Gaudreau et al., 2013; Markvart, 2014a; Markvart, 2014b).

But the JRP's potential conditions do not emerge from a proper assessment of alternatives to and alternative means of carrying out the DGR. In previous submissions to the JRP, we described

some of the major inadequacies in (a) OPG's 2004 Independent Assessment Study, which was carried out prior to the release of the 2008 Terms of Reference and 2009 EIS Guidelines, and (b) OPG's 2011 EIS and 2014 Alternative Means Risk Analysis, both of which failed to undertake an adequate assessment of alternative sites.

Overall, therefore, the conditions rest on significant uncertainties about the relative impacts and long-term performance of alternatives to and alternative means of carrying out the DGR project. Consequently, the conditions seem to emerge from an overall lack of context, which would have been provided had there been an adequate examination of alternatives. The following conditions clearly exhibit the JRP's and OPG's insufficient understanding of alternative means:

- 11.8 (Groundwater): The public requires more comparative examination of the behaviour of the tritium plume in circumstances provided by alternative means.
- 13.5 (Accidents and Malfunctions): The public requires more information about the relative effectiveness of existing and emerging imaging technologies which could be used to detect waste-to-container interactions that may lead to container breaches.
- 13.6.1 (Accidents and Malfunctions): The public should be confident that OPG has an adequate understanding of the relative long term seal performance and seal material behaviour of the containers that will hold radionuclides and other contaminants in a variety of different circumstances.
- 13.7 (Accidents and Malfunctions): OPG's 'Waste Acceptance Criteria' should have been provided to the public at the outset of the EA process as part of the basis for a comparative evaluation of alternative means.
- 13.8 (Accidents and Malfunctions): An evaluation of the long-term stability of the solidified active waste sludges and the potential release of liquids when exposed to conditions applicable to the DGR (to confirm that no further measures are required to control condensation from, and leakage of, sludges following packaging) should have been considered in a comparative evaluation of alternative means.
- 13.10 (Accidents and Malfunctions): OPG's future modeling for variant cases of the Disruptive Scenarios should have been part of a comparative evaluation of alternative means.

These examples represent components of the DGR Project that must be subject to scrutiny in a proper assessment of alternatives – before any decision is made to proceed. The fact that the conditions rest on an inadequate examination of alternatives should compel the Minister to reject the proposed conditions and DGR Project, and act in the public interest by requiring further investigation of the above and other components of the project.

## **6. Summary and Conclusion**

Our comments on the JRP's proposed conditions were framed by two guiding principles of the EA: sustainable development and the precautionary principle. We described some key features of sustainability and precaution that the JRP's potential conditions ignore: long-term perspective, uncertainty, democratic process, and consideration of alternatives.

**Long-Term Perspective:** The JRP’s potential conditions focus primarily on site preparation, construction and operation stages, while decommissioning and abandonment stages require proper attention. By not incorporating an appropriately long-term timeframe in the potential conditions, the JRP frees OPG of important obligations that should be in place throughout the lifetime of the proposed DGR project. In section 2, we provided a list of some key potential conditions that carry timeframe issues that the Minister should investigate.

**Uncertainty:** In section 3, we provided a list of some key potential conditions that reveal critical gaps in OPG’s understanding and consideration of the potential effects of the proposed DGR project. We also gave a list of significant ambiguities for the Minister to address. These ambiguities and critical gaps in understanding and consideration undermine the credibility and efficacy of the EA process, and the remaining (and considerable) uncertainty about long-term environmental impacts stands in sharp contrast to the precautionary principle. These potential conditions represent important concerns that should have been addressed publicly by the JRP and OPG – before a decision was made on the acceptability of the proposed DGR Project, and before the conditions were proposed.

**Democratic Process:** Though the potential conditions pertain to a diverse range of public interests associated with the lifespan of the proposed DGR Project, they provide only two openings for public input. Where the JRP sets out some requirements for public consultation, it is unclear with respect to how the terms ‘sufficient information’ and ‘reasonable period of time’ should be interpreted. The public should at a minimum be invited to review and comment on OPG’s annual report and all follow-up programs, management plans, and contingency plans required by the conditions. The public must have access to all of the information to which the CNSC has access in its review of OPG’s fulfillment of the conditions. And the process by which the public can review, comment on, and access relevant information should be clearly defined by the conditions.

**Consideration of Alternatives:** The JRP’s proposed conditions rest on an inadequate assessment of alternatives to and alternative means of carrying out the proposed DGR Project. Consequently, the conditions seem to emerge from an overall lack of context, which would have been provided had there been a proper examination of alternatives. In section 5, we provided a list of potential conditions that exhibit the OPG’s and JRP’s insufficient understanding of alternative means. These conditions represent components of the proposed DGR Project that must be subject to scrutiny in a proper assessment of alternatives – before any decision is made to proceed.

Finally, the JRP’s potential conditions are rooted in OPG’s assumptions about the proposed DGR Project and, by extension, insufficiencies in OPG’s EA methodology and findings, which have been underscored by many previous submissions to the JRP. In investigating the above and other concerns, the Minister would be rightly taking steps in the public interest to revisit and revise OPG’s assumptions and insufficiencies.

We urge the Minister to serve the public interest by rejecting the proposed conditions and DGR

Project on the basis of the serious shortcomings of the conditions and EIS more generally.

## References

- Benevides, H., & McClenaghan, T. (2002). Implementing Precaution: An ENO Response to the Government of Canada's Discussion Document, "A Canadian Perspective on the Precautionary Approach/Principle". Canadian Environmental Assessment Agency.
- Canadian Environmental Assessment Agency. (2009). Guidelines for the Preparation of the Environmental Impact Statement for the Deep Geologic Repository for Low- and Intermediate-Level Radioactive Wastes.
- Dryzek, J. (1987). *Rational Ecology*. New York: Basil Blackwell.
- Duinker, P. (2013). Written submission to the Joint Review Panel in the matter of OPG's Deep Geological Repository for Low and Intermediate Level Radioactive Waste. Document #1538.
- Fung, A. (2006). Varieties of participation in complex governance. *Public Administration Review, December Special Issue*, 66-75.
- Gaudreau, K., Markvart, T., & Gibson, R.B. (2013). Final Comments to the Joint Review Panel for the Deep Geologic Repository for Low and Intermediate Level Radioactive Waste Project – Environmental Impact Statement and Licence to Prepare Site and Construct Application.
- Gibson, R.B., Hassan, S., Holtz, S., Tansey, J., & Whitelaw, G. (2005). *Sustainability Assessment: Criteria and Processes*. Sterling, VA: Earthscan.
- Greening, F. (2014a). Written submission to the Joint Review Panel in the matter of OPG's Deep Geological Repository for Low and Intermediate Level Radioactive Waste. Document #1895.
- Greening, F. (2014b). Submission from Dr. F.R. Greening to the Joint Review Panel concerning the published radionuclide inventory data for certain types of CANDU waste. Document #1777.
- Healey, P. (2006). *Collaborative Planning: Shaping Places in Fragmented Societies*. New York, NY: Palgrave Macmillan.
- Joint Review Panel. (2015). Joint Review Panel Environmental Assessment Report: Deep Geological Repository for Low and Intermediate Level Radioactive Waste Project. CEAA Reference No. 17520. Canadian Environmental Assessment Agency.
- Markvart, T. (2014a). Comments to the Joint Review Panel for the Deep Geologic Repository for Low and Intermediate Level Radioactive Waste – Ontario Power Generation's Response to Information Request EIS 12-513. Document #1937.
- Markvart, T. (2014b). Application of the Contribution to Sustainability Test in Ontario Power Generation's Alternative Means Risk Analysis and Environmental Impact Statement. Document #2127.