



International Physicians for the Prevention of Nuclear War Canada

We are committed to the abolition of nuclear weapons, the prevention of war, the promotion of non-violent means of conflict resolution and social justice in a sustainable world.

Comments by International Physicians for the Prevention of Nuclear War Canada on the Deep Geological Repository (DGR) for Canada's Used Nuclear Fuel Project

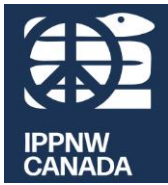
International Physicians for the Prevention of Nuclear War (IPPNW) is a physicians' group committed to the abolition of nuclear weapons, the prevention of war and the promotion of non-violent conflict resolution, and recognizes the link between nuclear power and nuclear weapons.

Introduction

IPPNWC (the Canadian affiliate of IPPNW) is writing to express concern about the Nuclear Waste Management Organization's (NWMO) proposed deep geological repository (DGR) for nuclear fuel waste which the NWMO is proposing to construct and operate between Ignace and Dryden in northwestern Ontario.

As a physicians group deeply committed to the abolition of nuclear weapons, International Physicians for the Prevention of Nuclear War Canada has concerns about the deleterious health effects of all stages of the nuclear power chain, including uranium mining and processing, ongoing radioactive toxic long lasting emissions during regular operation of nuclear reactors, the very real risk of nuclear weapons proliferation and war, the risk of catastrophic accident and the unsolved dilemma of storage of highly toxic nuclear waste. Along with these significant problems, the exorbitant cost of nuclear power with its opportunity costs and the prolonged time it takes to build reactors, make it irrelevant to our climate crisis and ongoing need for clean electricity sources.

The topic of this document, which is the need to deal with the high level nuclear waste, highlights one of many problems with nuclear energy. Despite 70 years since the inception of nuclear power, there is no feasible solution as to how to best store this highly toxic waste. The fact that there is no functioning DGR worldwide despite several attempts illustrates the technical



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difficulty of burying the waste where it remains hazardous for hundreds of thousands of years, an unfathomable length of time. Because this has never been done before there is no “best practice” with respect to the container strength and composition, requirements for long term monitoring, affects on the rock, and many other aspects of such a project. Computer modelling can never predict future changes in climate, earthquake risk and other possible geological processes that will affect the integrity of the DGR. This will pose unknown, possibly catastrophic risks to future generations.

The Initial Project Description (IPD), 1233 pages, as well as the summary, 92 pages, are filled with technical descriptions, justification of the need for the project, descriptions of community engagement and collaboration, reassurances to the public of safety of the project and of environmental protection, and assurances of diligent oversight for 160 years. However, none of that can assure the public, especially the residents living near the site and its watershed, that the highly radioactive contents of the DGR will not leak out and cause significant contamination of the area.

It must be remembered that the 150,000 tons of high level nuclear waste that will be inserted into the DGR is only the high level waste in existence until the end of the life of the present reactors. If we continue to produce nuclear energy, we will continue to create more waste, so this DGR is not a solution to the problem of nuclear waste. It will be an ongoing unsolved dilemma as long as we are producing nuclear power.

Radioactivity is toxic to all living things. Exposure to high levels can kill within a few minutes. Lower level exposure can cause cancer, cardiovascular disease, immune dysfunction, diabetes and other illnesses. Exposure of sperm and egg to radioactivity can cause miscarriages, stillbirths, childhood cancer, and congenital malformations. Radioactivity is much more deleterious in women and girls compared to men and boys. It is widely accepted in the scientific community that there is no proven safe level of exposure.

While we have many concerns about the project itself and the NWMO's method of selecting the site and their site selection, our comments are on



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the Impact Assessment of the NWMO's "initial project description" (IPD). We will highlight each of these concerns in this submission, and make recommendations at the end.

Short public comment period

The IPD is 1233 pages and the summary is 92 pages. A 30 day period for public comments is too short, is completely unacceptable and should be prolonged in order for the public to read and fully assess the IPD, and prepare appropriately detailed comments. This is an expensive complicated project that will have significant impact far into the future. The public deserves the opportunity to provide a thorough comprehensive analysis in order to participate fully in decisions made that will affect them and their progeny generations from now.

In addition this project deserves a full impact assessment with a public hearing.

Exclusion of transportation from the IA

Our biggest concern about the IPD is the decision to exclude an analysis of the risks of transportation of the used fuel bundles along public roads. The average distance between the source of the waste and the DGR is 1800 km, and would involve driving 2-3 trucks daily for 50 years from the temporary storage facility, which could be as far away as New Brunswick, to the DGR in northwestern Ontario. Moving high level radioactive waste will involve some leakage of radionuclides - while inserting the bundles into the containers for transportation and then repackaging them at the DGR site for above ground storage until they are ready to be placed in the DGR. This puts workers at risk.

Some public roads are busy thoroughfares where a road accident and breakage of used fuel containers would be extremely dangerous and potentially fatal for truck drivers, local travellers and residents.



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Highway 17 in Northern Ontario is a single lane highway in each direction, requiring passing in the opposite lane in order to overtake. There are therefore disproportionate numbers of head-on collisions and fatalities. It is known to be a dangerous road with hazardous winter conditions, frequent closures and traffic disruptions. This is a dangerous highway for 2-3 trucks per day containing highly radioactive used fuel bundles to travel on for the next 50 years.

Fully informed consent should be obtained from all residents including First Nations living adjacent to and all along all the transportation routes. Assuming consent is provided, the routes and itineraries of the trucks should be publicly available so anyone planning to use these routes can avoid them if they choose, and all local residents can take precautions when trucks are using these highways in close proximity to their homes.

Lack of ongoing monitoring

The plan is to monitor the DGR and its contents for a total of 160 years and then abandon them. It is unconscionable enough to bury this toxic waste at all, let alone to not continually monitor it on an ongoing basis forever, to protect future generations. Should future residents of this area decide to access the area, for instance while establishing a mine, they would unknowingly encounter the highly toxic radioactive bundles, which could be fatal for those exposed. Without ongoing monitoring and retrievability, communication of this risk over thousands of years would be impossible. Once abandoned for generations, future populations will likely not have knowledge of its existence let alone its extremely hazardous contents.

Whatever the geological integrity of the rock now, this will likely be different hundreds of thousands of years from now. When rock is fractured to make a hole in it close to a kilometre deep, the integrity of the rock is altered. The heat from the used fuel bundles could cause cracks in the rock as the radionuclides present in the used fuel decay and release heat. Any number of unforeseen risk factors such as earthquake risk and other geological events and changes in climate, could significantly increase the risk of



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leakage of the used fuel containers and DGR lining, especially over hundreds of thousands of years. It is impossible to predict these future changes and to measure the predicted risk.

No amount of computer modelling can guarantee that the used fuel containers, the DGR lining or the rock will not leak. Release of the contents of the DGR would be catastrophic, causing widespread contamination of air, water and soil.

It also must be remembered that the high level nuclear waste contains plutonium which is a nuclear weapons proliferation risk. With a long half life (24,000 years) the presence of plutonium in the DGR poses a threat of diversion for military purposes, which will be ongoing basically forever. The IA must address the possibility of future illegal retrieval of the waste to obtain the plutonium.

Page 18 of the summary claims that the DGR provides a “permanent, safe, and environmentally responsible solution for the management of all of Canada’s used nuclear fuel”, “eliminating the need for ongoing active management and protecting people and the environment for generations to come”. This could not be further from the truth. Without ongoing active management and radionuclide monitoring, the state of the containers and DGR will be unknown.

It is unethical to stop monitoring the waste, leaving risk of radionuclide leakage to future generations.

Lack of consideration of alternatives

Pages 87-89 of the IPD describes the rationale for choosing the DGR as the selected method of long term storage. It discusses how:

“new learning and technological innovation is easily incorporated into the management plan”



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“It provides real options and contingency plans should implementation through the phases not proceed as planned”

“The approach suggests a process for putting multiple options in place should these be required as contingencies throughout the implementation process”.

Clearly the timeline being considered in the IPD is only until after the waste is placed in the DGR and sealed which is 160 years from now. After that there is no access to it, no more monitoring and the assumption that it will never leak for hundreds of thousands of years. There cannot be any options, contingency plans, further learning or technological innovations after it is sealed and abandoned. These comments show a shocking and unethical lack of recognition that the toxic radioactive spent fuel will be dangerous for hundreds of thousands of years, burdening future generations for millennia.

This section also includes the following astonishing comments:

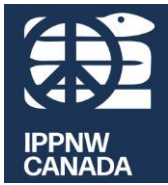
“The approach is designed to be fair in the distribution of the risks, benefits and uncertainties within this generation and across generations”

“The approach provides opportunity for future generations to influence the way in which the fuel is managed”

Again, the IPD could only be considering a relatively short timeline. Future generations going forward hundreds of thousands of years from now certainly bear basically all of the risk of leakage and contamination, with none of the benefits, and do not have any influence on our decisions today.

The IPD should have considered other options which are much more reversible, monitorable and safe, with extremely long term timelines in mind.

Recommendations



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We are committed to the abolition of nuclear weapons, the prevention of war, the promotion of non-violent means of conflict resolution and social justice in a sustainable world.

- 1) Transportation of the high level nuclear waste must be part of the impact assessment. Fully informed consent from all residents living in the region, including the entire watershed, and especially all First Nations, as well as everyone living on all public roads on the transportation routes, should be a requirement of continuation of this project. Assuming consent is provided, the routes and itineraries of the trucks should be publicly available so anyone planning to use these routes can avoid them if they choose, and all local residents can take precautions when trucks are using these highways.
- 2) Alternatives such as above ground storage at reactor sites with active management basically forever must be seriously considered. All possible alternatives should include considerations going forward hundreds of thousands of years, as the half lives of some of these toxic radionuclides are extremely long (in the millions of years).
- 3) The DGR should have a detailed plan for ongoing active management basically forever, monitoring for leakage of radionuclides, in order to protect the health and safety of future generations.
- 4) The IAAC should extend the public comment period to at least 60 days, to allow a complete, fair and fully public assessment of the IPD.
- 5) The project should be designated for a full review, including an impact assessment and public hearing so the public can participate meaningfully at every phase of the project.