Introduction:

Thank you for the opportunity to comment on NWMO's proposal regarding a Deep Geological Repository (DGR) for Canada's CANDU reactor waste. This waste has been building up for 50 years and nobody has figured out a completely satisfactory solution for handling such waste despite many notable attempts. This waste is the "Achilles Heel" of the nuclear power industry, but current waste has to be dealt with in the best informed way. Unfortunately, NWMO's ideas show deficiencies.

To introduce myself, I am a family physician, with my first degree and interest in physics. As I am now retired, I can spend time looking at your proposal, but 30 days in insufficient, a fact which many others have already informed you.

You have suggested that we comment about "specific deficiencies" in NWMO's proposal, I will describe a few deficiencies after a general introductory paragraph. I will end with specific recommendations.

Quotes from NWMO's proposal will appear in blue print.

General Remarks:

It has been estimated that CANDU radioactive waste, while never quite returning to the radioactivity of the original uranium ore, can be considered less radioactive after 1,000,000 years or 2,000,000 years. During this time, keeping it out the 'biosphere' is the aim.

According to archeology, the emergence of our species, homo sapiens, occurred about 300,000 years ago. Thus humans have generated an ethical issue for ourselves, which may include how we treat other species as well. We have irreversibly created a toxic radioactive poison which will last longer than our species has existed.

Nuclear waste is to be placed in containers. Humans have been producing containers for only 6,000 to 9,000 years, which is a small fraction of the time nuclear waste needs to be isolated.

In addition, each Deep Geological Repository (DGR), which is the generally recommended way to deal with such waste, will create yet another “Sacrifice Zone”, to add to the existing sacrifice zones which surround each nuclear station which produced the waste.

Specific Remarks indicating Deficiencies:
A.“Eliminating the need for future generations to actively manage used fuel…” is an expected and legitimate goal for the proponent, but the following goal of NWMO leaves me puzzled. “… support Canada’s commitments to climate action and achieving net-zero by 2050 by ensuring nuclear energy remains a sustainable and socially responsible energy source”

This second comment by NWMO appears out of the scope of what the proponent is supposed to do. More importantly, it shows contempt or lack of knowledge for the nature of the nuclear waste which it has been entrusted to care for.

B. The proponent has stated that the waste will be permanently stored “within solid rock” . This is impossible as there will be a shaft or entrance way into the caverns created in the rock. These entrance ways will have fans and pumps installed to protect workers, but these breaks in the rock will create permanent holes through which water, microbes, fungi and slim molds can enter.

Even under the most carefully controlled environments, objects, stored in museums, for instance, have to be constantly ‘restored’ because of microbial or other growths. Underground, the nuclear waste storage containers, with their coat of copper and Bentonite Clay cladding, will be attacked, on the outside by microbes which happen to like the environment and also attacked, on the inside by chemical reactions by the nature of the various elements which the radioactive substances have eventually decay into. In other words, what is stored inside the containers, today, is not what will be inside the containers centuries from now. Attacking microbes on the outside will evolve too.

C. The proponent wishes to abandon the DGR after 160 years. This is a very big deficiency as a small leak will not be detected until it is

too late to be effectively remediated. At risk, are the two water sheds, as well as pollution into the air which can be scattered by wind. "Out of sight, out of mind" is not good and alternatives, as suggested by the Seaborn Commission must be considered.

D. The Seaborn Commission suggests the need for a wide acceptance by the public. At the moment, the proponent does not have wide acceptance. NWMO has ignored the potential health concerns of those along the route. Personal working as emergency first responders and in emergency rooms will need to be taught skills of how to deal with possible spills of radioactive material. Pregnant women and those mothers with young babies may wish to be informed when trucks pass through their neighbourhood. These vulnerable persons may appreciate the information as it gives them the option to vacate the area with its low level ionizing radiation and its potential to harm to their baby.

E. The proponent states they have the acceptance of the people who live in Ignace and Wabigoon. I understand that the number of people who live there is quite small. I also understand that millions of dollars has been given or promised to these people. Will this money cover future additional costs for medical and mental health services when these people discover that temporary workers from outside their area may not treat them with respect?

NWMO describes the establishment of alterations to existing water ways and water purification plants within a 4 km by 4 km working area. Do current residents fully realize that their canoe routes may be altered or that fishing may not be what it used to be? As an outsider, I feel that the local residents may have been "bought off"and I see this as a potential deficiency. The proponent did not investigate the alternatives of locating the storage site near the production site.

F. Another issue is the vast amount of new resources to create the storage containers with 4 inch thick walls of copper. Where is this metal supposed to come from? What new mines will have to be built? This will cause more traffic, more cost and more sacrifice zones.

Recommendations:

1. That a full environmental assessment take place.
2. That NWMO be instructed to re-examine the Seaborn Commission Report with view to following their thoughtful advice.
3. That abandonment be rejected and replaced with the some other alternative such as continuous monitoring or rolling stewardship. These alternatives must be studied and carefully considered by NWMO, much more than NWMO already claims it has done.
4. That a though study of the German DGR, which leaked, be done.
5. That consideration be given to putting a pause or at least a slow-down on creating more nuclear waste until such time that a more generally acceptable way of handling the current waste is satisfactorily figured out.
6. That the concerns of those along the transportation corridors be taken more seriously. It is not good enough to blandly suggest that the "containers can withstand the worst case scenario accident". People know that anything engineered can fail. "Fail-safe" products routinely will fail at some point in time.
7. That the Public Health Agency of Canada or Health Canada or similar agency needs to be instructed and funded to examine the detailed effects of each of the more than 300 human made radioactive elements which can occur in CANDU waste. These are chemically toxic and radioactive and must be considered 'forever poisons'. Per - and polyfluoroalkyl substances (PFSAs) currently take the title of 'forever' chemicals, but radioactive toxic materials are also 'forever'. Currently, oversight of these substances has fallen between the cracks of Health Canada and CNSC. This must be remediated.

Respectfully submitted by:
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