

Submission to Natural Resources Canada Re: Review of Radioactive Waste Policy

From [REDACTED], Saskatoon, Saskatchewan

May 26, 2021

Dear Natural Resources Canada Staff,

Thank you for the opportunity to make a submission to your review on radioactive waste policy.

My submission relates to policy regarding radioactive wastes associated with uranium mine operations in Canada.

1. Long Term Containment Of Uranium Mill Tailings Is Critically Important

Uranium by its nature disintegrates into a chain of other radioactive substances that include thorium, radium, radon gas and radon progeny, including polonium. These other radioactive substances are all present in uranium ore when it is mined, and account for the bulk of the ore's radioactivity. The result is that after uranium has been extracted during the milling process, approximately 85% of the radioactivity in the ore remains behind in the uranium mill tailings.

The process of radioactive decay cannot be turned off, but while uranium is locked away deep below the surface of the Earth, human exposure to radioactivity is limited. Conversely, crushing uranium up and leaving the uranium mill tailings on the surface of the earth in large volumes inevitably increases the potential for human exposure and for long-lived radionuclides to move into the broader environment.

One of the radionuclides of greatest concern is radium-226, which is a potential pollutant of surface waters and ground water. The long radioactive half-life of thorium-230, the parent of radium, means that the quantity of radium in all uranium mill tailings will decline by only half in approximately 80,000 years. It is thus critical that if uranium is to be mined, the radioactive

mill tailings that are left over as a waste product be successfully contained and kept out of the environment for an extremely long period of time.

2. The Government of Canada Needs To Take More Responsibility For Mined-Out Uranium Properties And The Long Term Containment Of Radioactive Tailings On These Properties

I would like to urge the Government of Canada to take more responsibility for the long-term monitoring and containment of uranium mill tailings in Canada.

I see a worrisome trend in which the Canadian Nuclear Safety Commission is approving the transfer of mined-out properties back to the provincial government in whose jurisdiction the mined-out property lies, after decommissioning is complete and after a few years of post-decommissioning monitoring has occurred. The long-term problems likely to be encountered at these properties, in my view, are being underestimated, particularly problems related to uranium mill tailings. Moreover, the provincial governments assuming responsibility for these decommissioned properties are not being given the financial resources required to closely monitor and maintain them for thousands of years into the future.

3. A Need For More Federal Leadership In Decommissioning Uranium Mine Sites And Restoring The Larger Environment Around Mine Properties That The Government of Canada Played A Central Role in Developing

I would like to see the Government of Canada provide better financing for decommissioning uranium mine sites it played a major role in operating or purchasing uranium from. I would also like to see the Government of Canada take more responsibility for repairing environmental damage (beyond the mine site) caused by these uranium mine operations.

By way of example, I'll briefly discuss the uranium mine sites at Beaverlodge and Gunnar in northern Saskatchewan. The old Beaverlodge mine site is just a few kilometres from Uranium City, while the old Gunnar mine site is approximately 25 kilometres further south, on the northern shore of Lake Athabasca.

Both these uranium mines were originally developed for the primary purpose of supplying uranium to the United States Atomic Energy Commission for military purposes. The federal crown corporation Eldorado Mining and Refining Ltd. played a critical role in this regard, operating the Beaverlodge mine and purchasing the uranium output from Gunnar.

In my opinion, it stands to reason that the Government of Canada should take long-term responsibility for the Beaverlodge mine site and for the remediation of the natural environment beyond the mine site, while at Gunnar it should play a major role in financing the decommissioning of the mine site. Yet this does not seem to be happening.

At Gunnar, for example, it is the Government of Saskatchewan that is bearing more than 90% of decommissioning costs, which exceed \$200 million. The decommissioning work is being coordinated by the Saskatchewan Research Council.

At Beaverlodge, while modest decommissioning work is being financed by the Government of Canada, very little is being done to restore the natural environment that lies beyond the Beaverlodge mine and mill site itself. In nearby Beaverlodge Lake, a 58 square kilometre water body, uranium levels are 8 times Saskatchewan Surface Water Quality Objectives, while selenium levels are also elevated. Beyond Beaverlodge Lake, a whole chain of lakes in the Uranium City area have been contaminated with elevated uranium levels, for which the Government of Canada should assume remediation responsibility.

Canada Would Benefit From An Independent Agency That Oversees Uranium Mine Wastes and Nuclear Reactor Wastes

I suggest it would be useful to have an independent, federally funded agency that oversees the proper management of radioactive waste throughout the nuclear fuel cycle in Canada. This would include overseeing the proper management of radioactive uranium mine and mill tailings and the proper management of radioactive waste rock. It would also include overseeing the proper management of high-level radioactive waste from nuclear reactors.

The primary purpose of this agency should be to protect public health and the natural environment and to do so over the long-term.

Unfortunately, in my opinion, uranium mine tailings will need to be properly monitored and maintained for thousands of years into the future, as will high level radioactive waste.

I very much appreciate NRCan staff considering my suggestions.

Respectfully submitted,

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