

Atomic energy



"Canada is now embarking on a review of radioactive waste policy. The review is happening within an inadequate policy environment," writes Prof. Susan O'Donnell. PHOTO: ILJA NEDILKOVIK/PLASH

Conduct public consultation on radioactive waste in N.B.

Susan O'Donnell Commentary

Days before the provincial election was called, I wrote to Seamus O'Regan, federal minister of Natural Resources, requesting that his department hold a public consultation on radioactive waste in New Brunswick.

I offered the resources of my federally funded research project to organize the consultation at the University of New Brunswick this autumn.

Now, nuclear reactors have become an election issue, with Liberal Leader Kevin Vickers promoting new nuclear reactors for New Brunswick at every campaign stop.

We urgently need public discussions about new varieties of radioactive waste created by the new reactors, and the proposal to extract plutonium from existing used nuclear fuel stored at Point Lepreau to fuel them.

Currently, Canada has a brief (143-word) radioactive waste policy framework with several principles but no comprehensive policy or strategy. In late 2019, the International Atomic Energy Agency (IAEA) cited the inadequacy of Canada's policy and lack of a national strategy for the long-term management of radioactive waste. In February 2020, Canada agreed to address these inadequacies.

In May, more than 100 public interest groups across the country, including nine in New Brunswick, wrote to Minister O'Regan strongly supporting a public process to develop a comprehensive policy, and a socially acceptable strategy. In July, the Minister responded with a commitment to develop a comprehensive federal policy through consultation with stakeholders and "all Canadians."

New Brunswick is the only province outside Ontario with an operational nuclear power reactor, located at Point Lepreau. The government is supporting proposals to design and build two untested nuclear reactors at Lepreau. The new reactors propose to "burn up" the existing highly radioactive used fuel at Lepreau but they will also create new, even more intensely radioactive, used fuel.

Radioactive waste must be securely contained because it is highly dangerous to living things. Exposing a living cell to radioactive material can alter its DNA. Chronic exposure can eventually cause cancers and other harmful

health effects, including genetic damage that can affect offspring.

Several categories of radioactive waste exist. The deadliest is high-level waste, the irradiated fuel from a nuclear reactor. Freshly discharged used fuel would quickly kill any human without heavy shielding, and it remains dangerous for hundreds of thousands of years.

No secure long-term storage facility for high-level radioactive waste has been approved for use anywhere on the planet. At Lepreau, irradiated fuel is first cooled in a pool of water for 10 years, then stored in hundreds of concrete silos about a kilometre away from the reactor. Each silo, containing hundreds of fuel rods bundles, is welded shut and carefully sealed.

The long-term management of irradiated nuclear fuel is a federal responsibility, but the much larger volumes of "low" and "intermediate" level waste are the responsibility of the provincial government.

Radioactive steel, concrete and bulky pieces of contaminated equipment also remain dangerously radioactive for thousands of years. These materials cannot be recycled but must be "disposed of" as radioactive waste. Any release of waste materials stored at Lepreau will impact people living near the site and could pollute the Bay of Fundy.

Proponents of the two new reactors propose to access the irradiated fuel at Lepreau, by melting the solid material and extracting less than one percent of the total mass for reuse. This scheme, called "reprocessing," has never been done before in Canada and raises many safety and security concerns that require examination and oversight.

Some of the most radioactively contaminated sites on Earth – Hanford in the USA, Sellafield in the UK, Mayak in Russia – are the result of large-scale reprocessing of used nuclear fuel to extract plutonium.

Plutonium, a human-made material created during the nuclear reaction, is the primary nuclear explosive in the world's arsenals of nuclear weapons. But plutonium can also be used as a nuclear fuel, and the new reactors proposed for NB want to use the plutonium stored in the used fuel from Lepreau as fuel.

Reprocessing was unofficially banned in this country back in the 70s because of international implications. The widespread use of reprocessing potentially makes plutonium available to terrorists and rogue states for further processing into nuclear weapons or so-called "dirty"

bombs. Reprocessing for the new reactors will require military-level security at Lepreau.

The new reactors will themselves create irradiated fuel which is smaller in volume but much more radioactive per kilogram than the existing spent fuel at Lepreau. And the new used fuel will also require storage for hundreds of thousands of years.

A 2016 Ontario report on nuclear fuel "recycling" concluded that reprocessed fuel will be far more expensive than natural uranium currently used at Lepreau, and the final waste disposal costs will be billions of dollars more than they would otherwise be if the CANDU fuel is buried without reprocessing.

Non-fuel radioactive waste is New Brunswick's responsibility. Taxpayers of this province will be paying for the secure storage and maintenance of this waste for thousands of years into the future.

There is no existing storage facility approved for non-fuel radioactive waste in Canada. A proposal to build one in Ontario on the shore of Lake Huron was rejected a few months ago after a consultation process that took almost 15 years.

Canada is now embarking on a review of radioactive waste policy. The review is happening within an inadequate policy environment. Some elements of Canada's current approach contradict IAEA guidance. Nevertheless, Natural Resources Canada intends to finalize its plans for launching these new reactors by October 2020, before the revised radioactive waste policy is in place.

In my letter to the minister, I stressed that my offer to have my research team organize a consultation at the University of New Brunswick will include extending an invitation in both official languages to engage widely with Indigenous nations, rural and urban communities, environmental and industry groups, and other stakeholders.

We need to ensure that policies and strategies are developed as soon as possible, transparently, in meaningful consultation with all New Brunswickers and Indigenous peoples.

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