



Canada's federal Energy Minister Jonathan Wilkinson, pictured recently in a scrum on the Hill. We are against the government's support for the nuclear industry's plan to extract plutonium from spent nuclear fuel and export the technology, write M.V. Ramana and Susan O'Donnell. *The Hill Times* photograph by Andrew Meade

# Plutonium is plutonium, period, and separating it increases nuclear proliferation risks

There is no legitimate reason for the Canadian government to support technologies that create the potential for new countries to separate plutonium and develop nuclear weapons, write M.V. Ramana and Susan O'Donnell.

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Opinion



FREDERICTON, N.B.—We welcome Guy Hotte and Neil Alexander's response to our recent opinion piece for *The Hill Times* and this opportunity to set the record straight. We argued against the government's support for the nuclear industry's plan to extract plutonium from spent nuclear fuel and export the technology. Canada's support for reprocessing will create a new global security risk and raise legitimate questions about our government's desire to be a leader in the peaceful use of nuclear energy.

Hotte and Alexander mistakenly argue that the crux of our argument is about separated plutonium. In fact, the problem

is separating what they call the "unwanted elements" from the plutonium.

These "unwanted elements," known as fission products, are a natural result of the underlying physical process—fission—through which reactors produce energy. Fission products are fiercely radioactive and must be removed to prepare the fuel mix for the proposed Moltex reactor. At the same time, the high level of radioactivity in these fission products is also beneficial. That radiation offers a barrier to theft—any would-be thief of spent fuel would be quickly exposed to lethal levels of radiation.

Any process that removes some or all of these radioactive materials inevitably makes it easier to get at the plutonium. This is why safeguards experts from six U.S. national laboratories concluded in a 2009 study that technologies such as pyroprocessing that produce even "impure plutonium" significantly reduce proliferation resistance. One calculation showed that the radiation barrier in the output from something like a future Moltex pyroprocessing facility would be one thousandth that provided by the radioactive fission products in spent fuel.

Although it would be necessary to further process this material in order to produce plutonium that can be used to make nuclear weapons, the heavy lifting has already been done. Rather than requiring a multi-billion dollar reprocessing plant, with layers of shielding to protect plant staff from dangerous levels of radiation, this separated material can be processed in a relatively low-cost laboratory hot cell.

Would Canada's investment in such a technology intended for export help ease the way for would-be proliferators?

The simple, and obvious, answer is yes. Exporting reactors that use plutonium as fuel, either in pure or slightly impure forms, will aid a recipient country's move toward nuclear weapon capability. Hotte and Alexander argue that a country could adopt other ways of obtaining plutonium. Of course, but so does the gun lobby in the United States argue for continued sales because offenders can kill using knives or other weapons. This error of logic was the same one that led, for example, to Canada exporting the CIRUS reactor to India, which then used plutonium produced in this reactor to make and test its first nuclear weapon.

There could well be future proliferators. Recently, in Halifax, the U.S. defense secretary warned of the risks of nuclear proliferation by authoritarian states wanting to emulate Russia.

Therefore, our original conclusion stands: there is no legitimate reason for the Canadian government to support technologies that create the potential for new countries to separate plutonium and develop nuclear weapons.

We end with a note of agreement: Hotte and Alexander offer a good list of what would be beneficial to all of us, including reducing uranium mining, increasing emissions-free power generation, reducing the amount of spent fuel to be disposed of in a deep geologic repository, and reducing plutonium production. Uranium mining, burying any kind of radioactive waste, and producing plutonium in any form are definitely undesirable. But there is a better way to achieve all these desirable goals: stop constructing nuclear plants, phase out existing ones, and invest the billions that would be saved in renewable sources of energy and other technologies associated with storage and demand side strategies. This strategy would result in not only getting more emission reductions, due to the lower costs compared to nuclear reactors, but also achieving those reductions sooner because we won't have to wait for experimental and dangerous technologies.

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Noralee Bradley is Executive Vice President, External Affairs and Chief Sustainability & Legal Officer at Nutrien. Noralee oversees a portfolio of corporate functions, internal communications, and external stakeholder relations, including Legal, Integrity/Compliance, Sustainability, Government & Industry Affairs, and Brand & Culture Communication across Nutrien's global operations in North America, South America, Australia, Trinidad and Europe.

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