

OPEN LETTER TO PRIME MINISTER JUSTIN TRUDEAU

22 September 2023

To: Prime Minister Justin Trudeau
Jonathan Wilkinson, Minister of Natural Resources
Rumina Velshi, President, Nuclear Safety Commission
Mélanie Joly, Minister of Foreign Affairs
Chrystia Freeland, Deputy Prime Minister and Minister of Finance
Steven Guilbeault, Minister of Environment and Climate Change
John Hannaford, Clerk of the Privy Council and Secretary to the Cabinet

Re: Our Request for a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate plutonium from CANDU spent fuel

Dear Prime Minister Trudeau and other concerned senior officials of the Government of Canada, In 2021, a number of us sent [three letters](#) to you regarding our nuclear weapons proliferation concerns about your government's funding of a proposal by a nuclear startup, Moltex, to reprocess CANDU spent fuel. Moltex proposes to use the recovered plutonium to fuel a molten-salt reactor to be built on the site of the 40-year-old Point Lepreau Nuclear Generating Station in New Brunswick. We were even more concerned about Moltex's proposal to use Canada as an export hub for those technologies.¹

The Prime Minister's office informed us on 23 June 2021 that the matter had been referred to the Minister of Foreign Affairs and the Minister of Natural Resources. We have received no response from either.

Recently, however, we learned, through an Access to Information Act request by a Canadian academic, that, despite the strong opposition of Moltex,² the Ministry of Natural Resources launched a policy-making process on reprocessing in collaboration with the international CANDU Owners Group and in consultation with the Ministry of Foreign Affairs and the Nuclear Safety Commission.³

We are gratified to learn of this development. We also were gratified to see you join with the other leaders of the G7 countries in Hiroshima on 19 May 2023 in stating that, "We also commit to prioritizing efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world."⁴

Moltex has claimed that it does not intend to separate out pure plutonium and hence its product will be "proliferation resistant," i.e. not usable to make nuclear weapons. This was argued in the US two decades ago for a very similar process, pyroprocessing, but a 2009 review by experts from six US national nuclear laboratories concluded,⁵

"the additional proliferation resistance of these alternative processes...over PUREX [the technology used by the US and other weapon states to separate pure plutonium for weapons] in particular is small. The reason is the ease, given the resources available to a state, with which the various

plutonium-bearing materials or the reprocessing process itself could be converted to produce separated plutonium.”

A recent review by a US National Academy of Sciences committee, on which two of us served, reached the same conclusion after hearing a presentation from Moltex’s CEO:⁶

“While these technologies may provide some benefit in delaying direct use of the materials, there was consensus among the committee members that none provided significant proliferation resistance at this time.”

We doubt Moltex’s reprocessing project will be commercially successful. Commercial reprocessing has failed economically over and over again. In the US, a small commercial reprocessing plant, subsidized by the federal government and the State of New York, operated from 1966 and 1972. It was shut down for safety improvements in 1972, but rather than spend the funds for upgrading the plant, the owner abandoned the project, and the site became a multi-billion-dollar federally-funded radioactive cleanup project that continues today.⁷ In the UK, government-owned British Nuclear Fuels Limited built and operated larger plants into bankruptcy, resulting in a hundred billion pound government-funded radioactive cleanup project.⁸

The processing technology used in these earlier plants was developed in the US nuclear-weapons program and is quite simple. The technology proposed by Moltex appears to be based on the more complex pyroprocessing technology developed by the Idaho National Laboratory, which has spent hundreds of millions of dollars over two decades thus far in its attempts to use it to reprocess a mere two tons of spent fuel.⁹

There is likewise every reason to be skeptical of Moltex’s reactor technology.¹⁰

How the funds of Canada’s taxpayers are spent is not our affair, however. Our concern is that that Canada’s government, while pledging to “efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world,” is actually funding a project to *increase* the production and accumulation of weapons-usable plutonium for civil purposes around the world.

We have been equally critical of U.S. programs to promote reprocessing. The Biden Administration has failed to rein in a Trump Administration-launched program to promote reprocessing in the Department of Energy.¹¹

It is especially distressing that Canada and the United States should have forgotten the painful lessons from their partnership in facilitating India’s program to separate plutonium ostensibly for nuclear power. Some of the plutonium India produced and separated with that assistance was used in the plutonium-fueled prototype bomb India tested in 1974, precipitating the South Asian nuclear arms race.¹²

An undated internal briefing memo for the Deputy Minister of Natural Resources, included in that Ministry’s Access to Information Act release, claimed,

“reprocessing is currently being carried out internationally by several nations using processes similar to the Moltex WATSS process, but which more completely separate plutonium from the other materials and contaminants in the fuel, and do so successfully while following international safeguards protocols, and under the purview of the IAEA.”

This is false. Only Japan has plans to carry out reprocessing under international safeguards. The other states that conduct commercial-scale reprocessing (China, France, India, Russia) are nuclear-armed states that are not obligated to accept IAEA safeguards. But as the examples of India and North Korea show, states can claim peaceful purposes but then use the plutonium for nuclear weapons.

As the G7 statement recognized, reprocessing is not necessary for nuclear energy and nonproliferation policy should focus on “efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world,” not increase it.

If invited, some of us would be happy to provide a detailed briefing on these issues as input to your government’s policymaking process.

Given the gravity of the issues involved, this is a public letter as were our previous letters to you.

Sincerely,

Peter Bradford, former chair of New York and Maine utility regulatory commissions and former U.S. Nuclear Regulatory Commissioner (1977-82)

Thomas M. Countryman, Chairman, Arms Control Association, Assistant Secretary of State for International Security and Nonproliferation (2011-2017)

Steve Fetter, Professor of Public Policy, University of Maryland,* former principal assistant director, Office of Science and Technology Policy, the White House (2009-12, 2015-17)

Robert Gallucci, Professor, Georgetown University,* former Ambassador at Large and Assistant Secretary of State for Political-Military Affairs

Richard L. Garwin, IBM Fellow Emeritus, IBM Thomas J. Watson Research Center,* member U.S. President's Science Advisory Committee (1962–65, 1969–72)

Victor Gilinsky, Nonproliferation Policy Education Center; Nuclear Regulatory Commissioner (1975-79)

Alan J. Kuperman, Associate Professor, and Coordinator of the Nuclear Proliferation Prevention Project, University of Texas at Austin

Edwin Lyman, Director of Nuclear Power Safety, Union of Concerned Scientists

Allison M Macfarlane, Director, School of Public Policy and Global Affairs, University of British Columbia*; Chair, US Nuclear Regulatory Commission (2012-13) |

Henry Sokolski, Executive Director, Nonproliferation Policy Education Center; Deputy for Nonproliferation Policy, Office of the Secretary of Defense (1989-93)

Sharon Squassoni, Research Professor of the Practice of International Affairs, George Washington University, former State Department and Arms Control and Disarmament Agency official.

Frank N. von Hippel, Professor of Public and International Affairs, emeritus Program on Science and Global Security, Princeton University* and contact for communications, fvhippel@princeton.edu

* For identification only.

Notes

¹ Our previous letters were sent on 25 May, 27 July and 24 November 2021.

² “Moltex would likely not have come to Canada if a reprocessing policy had been mandated at the time,” Rory O’Sullivan, CEO, Moltex Energy, Comment “Re: Natural Resources Canada’s Draft Policy on Radioactive Waste Management and Decommissioning,” 24 March 2022, Access to Information Act release, Natural Resources Canada, 8 August 2023.

³ *Policy Development on Reprocessing* (Ministry of Natural Resources Canada, 2021), Access to Information Act release, Natural Resources Canada, 8 August 2023.

⁴ https://www.international.gc.ca/world-monde/international_relations-relations_internationales/g7/documents/2023-05-19-g7_leaders_vision-g7_vision_dirigeants.aspx?lang=eng.

⁵ *Proliferation Risk Reduction Study of Alternative Spent Fuel Processing* (Brookhaven National Laboratory, 2009), <https://www.bnl.gov/isd/documents/70289.pdf>.

⁶ *Merits and Viability of Different Nuclear Fuel Cycles and Technology Options and the Waste Aspects of Advanced Nuclear Reactors* (National Academy Press, 2023) p. 211, <https://www.nationalacademies.org/our-work/merits-and-viability-of-different-nuclear-fuel-cycles-and-technology-options-and-the-waste-aspects-of-advanced-nuclear-reactors>.

⁷ https://en.wikipedia.org/wiki/West_Valley_Demonstration_Project, <https://www.chbvw.com>, <https://www.energy.gov/em/articles/doe-issues-draft-request-proposal-west-valley-demonstration-project-phase-1b-contract>.

⁸ <https://www.nao.org.uk/reports/the-nuclear-decommissioning-authority-progress-with-reducing-risk-at-sellafield/>.

⁹ <https://blog.ucsusa.org/edwin-lyman/the-pyroprocessing-files/>.

¹⁰ <https://thebulletin.org/2022/06/molten-salt-reactors-were-trouble-in-the-1960s-and-they-remain-trouble-today/>.

¹¹ Letter to the Biden Administration, “13 US Nonproliferation Experts Request a Review of the Department of Energy’s Promotion of Civilian Plutonium Separation,” 20 June 2021, see also Jungmin Kang, Masafumi Takubo, Frank von Hippel, “Some fuels never learn. US Energy Department returns to costly and risky plutonium separation technologies,” *Bulletin of the Atomic Scientists*, 14 Sept. 2023, <https://thebulletin.org/2022/09/some-fuels-never-learn-us-energy-department-returns-to-costly-and-risky-plutonium-separation-technologies/>.

¹² George Perkovich, *India’s Nuclear Bomb: The Impact on Global Proliferation* (University of California Press, 1999).