

Information Series

THE CANDU MOX FUEL OPTION: CANADA'S POTENTIAL CONTRIBUTION TO NUCLEAR NON-PROLIFERATION



Canada

Ministère des Affaires étrangères
et du Commerce international

Department of Foreign Affairs
and International Trade



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The United States and the Russian Federation have declared 50 tonnes and "approximately" 50 tonnes respectively of their weapons-grade plutonium surplus to defense needs. This plutonium is a proliferation risk as it can be remade into nuclear weapons. The G-7 group (political group of the 7 most industrialized countries) is concerned about the security of weapons-grade plutonium. While it cannot be readily destroyed, it can be downgraded and made effectively inaccessible for reuse in nuclear weapons, thereby obviating its proliferation risk.

The United States and the Russian Federation are both considering MOX fuel (fuel composed of mixed oxides of uranium and plutonium) as the main or only component respectively of their proposed disposition programs, which are expected to proceed in parallel. They have not yet reached a bilateral disposition agreement.

The United States and the Russian Federation have both expressed a preference for total domestic disposition. But Russia has existing reactor capacity of not more than 2 tonnes of weapons-grade plutonium per year and would need third-country capacity in order to undertake faster disposition, as advocated by the United States. The United States has sufficient reactor capacity but an eventual

US-Russia agreement may require some disposition in a third-country. For these reasons, Ontario Hydro CANDU reactors represent one of the options that could assist with disposition. Canada has therefore accepted, in principle, that the US and Russia consider use of Ontario Hydro CANDU reactors as an option for their disposition programs.

Canada strongly supports American and Russian disarmament efforts. We want to ensure that surplus weapons-grade plutonium is never remade into nuclear weapons. The option of using CANDU reactors in Canada would represent a significant Canadian contribution to international peace and security and be fully consistent with Canadian non-proliferation policies and its role of championing these policies internationally.

To date, the United States and the Russian Federation have not made a specific and formal request to use Canadian reactors. They continue to study various options. As part of their assessment of the CANDU MOX option, they will undertake parallel tests (called "Parallellex") of small samples of MOX fuel at AECL's Chalk River Laboratories in 1999.

Any Canadian MOX fuel program would have to meet the requisites of Canadian policies and legislation, including *THE ATOMIC ENERGY CONTROL (AEC) ACT*, *THE TRANSPORTATION OF DANGEROUS GOODS ACT* and *THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)*.

A Canadian MOX fuel program would not involve the entry into Canada of weapons-grade plutonium per se. MOX fuel would be fabricated abroad, composed of less than 5% plutonium oxide made from surplus weapons-plutonium and more than 95% uranium oxide. It would be in the form of a hard pellet that would be clad in metal and shipped in approved containers for such materials. It has been estimated that the transport of MOX fuel represents no greater risk, and likely even smaller, to public and environmental safety than larger quantities of other such materials transported on a routine basis at present.

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