

6. Prevent the Reprocessing of Military Plutonium Wastes into Fuel

Convenors: Louis Zeller, Vladimir Sliviyak, Konstantin Kozlov, Masa Takubo, Natalia Mironova;

Speaker: Louis Zeller, Blue Ridge Environmental Defense League

Preamble

Today, the United States of America and the Russian Federation hold a toxic legacy of plutonium waste from nuclear warheads. While citizens of many nations applaud the dismantling of strategic nuclear weapons, we are deeply troubled by the provisions of the US/Russian bilateral plutonium disposition agreement that allows each nation to use 34,000 kilograms of this military waste in civilian nuclear electric power plants. ^[1]

We hereby stand opposed the reprocessing of plutonium for fuel because it presents unsupportable risks to public safety and the environment, and undermines the goal of nuclear non-proliferation. Manufacturing plutonium fuel (MOX, see end note) would create vast amounts of waste. And, plutonium fueled reactors would create an unsolvable international nuclear security dilemma.

The authors of this presentation appreciate this opportunity to expand upon these concerns and to propose alternatives to the 2005 Review Conference of the Parties to the Nuclear Non-Proliferation Treaty.

Human Health Problems at Two of the Most Polluted Places on Earth

The Savannah River Site in South Carolina is an 802 square kilometer complex polluted by five decades of atomic weapons manufacturing. Up to 100 million curies of tritium were released over the decades, contaminating the region's drinking water. And 490 million curies of liquid high level radioactive waste are stored in underground tanks. ^[7] Near the Savannah River Site, the death rate is 19.8% above normal, largely from heart disease and cancer; ^[8] both are associated with ionizing radiation. ^[9]

The industrial complex at Mayak produced plutonium for the first Soviet atomic bomb. For over 40 years the Siberian Chemical Combine pumped more than 1 billion Curies of radioactive poisons into underground aquifers. Today there are about 200 million Curies of radionuclides including plutonium in open basins, pulp repositories, and burial grounds. ^[10] The Techa River passes through many villages before discharging radioactive waste into the Arctic Ocean. Many residents have been evacuated, but one village remains inhabited: Muslumovo. The people of this town, which is closer to Mayak than many of the evacuated villages, have been left behind; they believe they have been singled out as Muslim "guinea pigs" in a horrible radioactive experiment. ^[11] At the request of NGOs, on April 11, 2005 the General Prosecutor of Russia started a criminal investigation of liquid waste dumping into the Techa River by plutonium manufacturing enterprises in the Chelyabinsk oblast of Russia.

Now Minatom wants to build a new plutonium fuel factory on the site of the Siberian Chemical Combine. The technology of the French firm COGEMA was adopted for Russian plant. ^[10] This year, the US Nuclear Regulatory Commission granted a license to construct a similar factory at the Savannah River Site in South Carolina.

Plutonium fuel production would create enormous amounts of radioactive waste. Official estimates are that 82,000 liters of high activity radioactive waste containing 84,000 Curies of americium, 174,000 liters of plutonium- and uranium-bearing wastes, and 1.4 million liters of low-level radioactive waste would be produced *annually*. ^[12]

Security and Safety Problems

Plutonium fuel requires transportation of weapons grade plutonium and fresh fuel across thousands of miles of open country. According to the only independent study on nuclear transportation produced in Russia, there is a serious risk of accident on railroads that may lead to plutonium contamination of the environment. ^[13] In the US, Duke Energy got an exemption from post-9/11 security measures for its plutonium fuel test reactor. ^[14]

Plutonium utilization in aging Russian VVER-1000 reactors is dangerous and may lead to proliferation from civil reactor sites. ^[15] American plants are no better. Duke Energy reactors depend on unreliable baskets of ice for cooling during an emergency. Plutonium makes a poor fuel because it is difficult to handle, store, and transport. ^[16]

Alternatives

There is an alternative to plutonium fuel: immobilization. Mixing the plutonium with liquid glass and radioactive waste, would avoid the risks to human health caused by plutonium reactors. It would save hundreds of millions of dollars. And, it would return us to a more sensible non-proliferation policy.

American and Russian environmental groups strongly oppose the plutonium fuel program. In the US, citizens called upon the Governor of South Carolina to stop plutonium fuel shipments. ^[5] In Russia 83% of the residents of Tomsk are opposed to a plutonium facility. ^[6]

Our united view is:

1. Plutonium must not be used as fuel in civil reactors.
2. Plutonium must be kept at well-protected sites.
3. Plutonium must be immobilized in the future to prevent smuggling and re-use in nuclear weapons.

Basis for Action by the Review Committee

The Thirteen Steps provides a foundation for opposing plutonium reprocessing. Step 10 calls upon nuclear weapons states to place fissile material no longer required for military purposes under international verification. ^[2] But the Surplus Plutonium Disposition program now underway in the US and Russia would transfer fissile material from public, governmental management to private, commercial control. We believe that plutonium would no longer be subject to effective international verification if it is turned over to Duke Energy, an investor-owned American utility, and COGEMA, a French reprocessing corporation.

Further, we agree with those who advocate expanding the scope of a Fissile Materials Cutoff Treaty to include a ban on civilian plutonium production. ^[3] Paul Leventhal, President of the Nuclear Control Institute, described the birth of the plutonium reprocessing chimera when he said,

There is a long and troubling history that has brought us to this present state of affairs. The original assumptions about the scarcity of uranium and the inevitability of the plutonium-breeder reactor have proven false, but the original dream of plutonium as the key to limitless energy has not faded. It is nurtured by a handful of powerful, government-run companies that seek to impose a plutonium-fuel economy on the world.

The nightmare of plutonium energy is not limited to the nuclear weapons states. In this context it is vital that the Rokkasho reprocessing plant in Japan, planned to open in 2007 as the first commercial-scale plant in a non-nuclear-weapon state, should be abandoned.

And regarding the dangerous example of how the superpowers are disposing of their warhead plutonium, we pray this body heeds the words of John D. Holum, former Director of the US Arms Control and Disarmament Agency, who warned that other countries “would hear only one message for the next 25 years: that plutonium use for generating commercial power is now being blessed by the United States.” ^[4]

Conclusion

The plutonium fuel program undermines international agreements for nuclear non-proliferation. The circulation of plutonium fuel in the commercial sector would increase the risk of diversion. There is no way to ensure that plutonium reprocessing facilities for electric power will not be turned to military use.

Natalia I. Mironova, President of the Movement for Nuclear Safety in Chelyabinsk, said that nuclear technology companies are driven by a profit motive which conflicts with the nuclear non-proliferation system. We submit that a global movement for a world without nuclear weapons must also halt the drive for plutonium power. □

End Note

Commercial nuclear fuel typically contains the oxide form of uranium. The nuclear industry's term for this fuel is “MOX” because it is a mixed oxide containing both

uranium and plutonium. But the *primary fissile isotope* of the fuel is plutonium, so I use the more accurate term “plutonium fuel.”

References

[1] September 2000 US– Russian Agreement Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation

[2] *Final Document of the 2000 Review Conference to the NPT*, Paragraph 15

[3] [*The Plutonium Industry and the Consequences for a Comprehensive Fissile Materials Cutoff*](#), Paul Leventhal, a paper presented at the seminar "Working Toward a Nuclear Weapon Free World," Oxford, U.K., April 28-30, 1997

[4] Dave Airozo, "Nonproliferation Concerns Muddle Clinton Administration Plutonium Policy", *NuclearFuel*, 2 December 1996, p. 7.]
www.nti.org/db/nisprofs/russia/fissmat/plutdisp/impact.htm

[5] Groups Urge Sanford to Block MOX, The State, Columbia, SC, 8 April 2005

[6] Russian Plutonium Utilization - View of an Environmentalist, Vladimir Sliviak, 2005

[7] *Danger Lurks Below: The Threat to Major Water Supplies from US DOE Nuclear Weapons Plants*, Alliance for Nuclear Accountability, April 2004

[8] *South Carolina Vital And Morbidity Statistics 1998*, Volume I, Division of Biostatistics, SC Department of Health and Environmental Control, December 1998

[9] *Introduction Radiation from Medical Procedures in the Pathogenesis of Cancer and Ischemic Heart Disease*, John W. Gofman, MD, PhD, 1999

[10] “Mixed-Oxide Fuel Plant: For and Against,” Institute of International Environmental Safety (IIES), Siberian Environmental Agency, Tomsk Ecological Student Inspection by Lev Blinov, and Tomsk regional Environmental Protection Agency, 15 April 2004, Translated by Elvira Nurieva, IIES

[11] Muslumovo – Village in the Nuclear Garbage Can, Tihonov Alexander Mihaylovich, 1995

[12] *Mixed Oxide Fuel Fabrication Facility Environmental Report, Revision 1 & 2*, Duke COGEMA Stone & Webster, 11 July 2002, (tables 3-3 and 3-4)

[13] Study report "Transportation of nuclear materials and radioactive waste in Russia: the practice of unavoidable risk", Kuznetsov V.M., Slivyak V.V., Moscow 2001

[14] US Nuclear Regulatory Commission, Final Partial Initial Decision In the Matter of Duke Energy Corporation Catawba Nuclear Station, Docket Nos. 50-413-OLA and 50-414-OLA, ASLBP No. 03-815-03-OLA, 18 April 2005

[15] Study report "The use of MOX in Russian reactors VVER-1000", Kuznetsov V.M., Slivyak V.V., Moscow 2000

[16] PLUTONIUM: THE LAST FIVE YEARS, Don Moniak, BREDL, February 6, 2001