

# Plutonium Fuel Fabrication Facility Environmental and Human Health Impacts

The Blue Ridge Environmental Defense League opposes the use of plutonium fuel in commercial nuclear power reactors. While we support the goal of putting plutonium into non-weapons usable form, we believe that the use of plutonium as a reactor fuel is wrong for environmental, economic, public health, and national security reasons. By encouraging a plutonium economy in Russia and the United States, the plutonium fuel program undermines international agreements for nuclear non-proliferation.

**The Nuclear Regulatory Commission issued a final environmental impact statement for the plutonium fuel factory in 2005 which details the health risks.\* It states:**

*“Human health impacts include potential exposure to radiological and chemical materials via pathways associated with air, water, soil, and the food chain.”*

SRS employees and members of the public *“could be exposed to chemicals emitted to air, water, or soil”* from the proposed fuel factory.

*“During an accident, facility workers might be subject to severe physical and thermal (fire) forces and could be exposed to releases of chemicals and radiation.”*

*“Plants grown in the area where the emission plume passed could become contaminated by deposition of radionuclides on the leaves or ground surfaces”*

*“Radionuclides deposited on leaves could subsequently translocate to the edible portions of the plants, and those deposited on ground surfaces could subsequently be absorbed by plant roots. Livestock and their products could become contaminated if the livestock ate the contaminated surface soil and plants.”*

**The Nuclear Regulatory Commission’s environmental impact statement gives facts and figures on the plutonium facility’s pollution and contamination. It reveals:**

Workers at the facility would be exposed to a dose of 15 person-rem per year, three times the maximum limit of five rem per person, per year required by the Code of Federal Regulations.

Even using a two stage high efficiency filter system to remove radioactive materials from exhaust discharged to the atmosphere, the plant would emit radioactive pollutants including plutonium 236, 238, 239, 240, 241, 242, americium 241, and uranium 234 and 235 during normal operation.

Nuclear waste at the Savannah River Site would increase. The plutonium fuel plant would generate 5,796 cubic yards of transuranic waste, six million gallons of liquid low-level waste and 7,916 cubic yards of solid low-level waste.

Transportation of uranium and plutonium feedstock, plutonium fuel to and from reactors and transuranic waste would result in 1,497 to 3,512 truck shipments.

People could be exposed to radiation by inhalation of airborne radionuclides and by eating contaminated vegetables, meats, and dairy products.

An accidental release of toxic chlorine or nitrogen tetroxide could envelope the facility and cause “*very large exposures to SRS workers at a distance of 100 meters.*” \* (330 ft)

The EIS rules out any analysis of acts of terrorism on the proposed plutonium fuel plant.

### **Background Information**

The US Department of Energy’s Surplus Plutonium Disposition Program plans to convert approximately 37 tons of weapons-grade plutonium from dismantled nuclear weapons into fuel for commercial nuclear power plants. The plan is to mix the plutonium with depleted uranium to form a “mixed oxide” fuel, also known as “MOX.” DOE designated Shaw AREVA MOX Services (formerly Duke Cogema Stone & Webster) as the contractor to design, construct, and operate a mixed oxide fuel fabrication facility. The \$4 billion facility would include a fuel factory, a Pit Disassembly and Conversion Facility which would convert surplus plutonium from metallic form to plutonium dioxide powder and a Waste Solidification Building. \*

On March 30, 2005, the Nuclear Regulatory Commission issued a Construction Authorization permit to Shaw AREVA MOX Services to build a plutonium fuel factory at the Savannah River Site in South Carolina. On September 27, 2006, Shaw AREVA MOX Services submitted a license application and Integrated Safety Analysis Summary for a plutonium fuel fabrication facility at SRS.\*

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\* Technical basis for the construction authorization is contained in NUREG-1821, “Final Safety Evaluation Report on the Construction Authorization Request for the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina.” The environmental review is in NUREG-1767, “Environmental Impact Statement on the Construction and Operation of a Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina - Final Report.” Available at <http://www.nrc.gov/materials/fuel-cycle-fac/mox/licensing.html>.

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