



Savannah River Site Watch

Savannah River Site Watch
Columbia, South Carolina
<https://srswatch.org/>
Plutonium News Update
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DOE Decision to Dispose of Unirradiated Plutonium Fuel (MOX) Stored at Los Alamos National Lab in the Waste Isolation Pilot Plant must be Reviewed in Environmental Impact Statement

Unprecedented Disposal as Waste of Useless Test MOX Fuel, Containing Weapon-Grade Plutonium, Raises Security and Environmental Questions, Closes another Chapter on DOE's Bungled MOX Project

Columbia, South Carolina – According to a recently released environmental document by the U.S. Department of Energy, the agency plans to dump unused plutonium fuel into the Waste Isolation Pilot Plant (WIPP) in New Mexico. The uranium-plutonium fuel, called mixed oxide (MOX), is now stored at the Los Alamos National Lab (LANL). As its disposal in WIPP would be unprecedented, a full environmental and security review is merited, according to the public interest group Savannah River Site Watch in Columbia, South Carolina.

The disposal directly into WIPP of the unirradiated MOX fuel, containing around 28 kilograms of weapon-grade plutonium, raises security and waste-management concerns, according to the public interest group Savannah River Site Watch. The fresh MOX is now stored at the PF-4 plutonium facility at Los Alamos, which DOE wants to clean out to clear-up space for unnecessary, expanded production of plutonium "pits" for nuclear weapons.

According to SRS Watch, the proposal must not be finalized until a full Environmental Impact Statement on it is prepared by DOE's National Nuclear Security Administration. The EIS must review environmental and health impacts of handling and repackaging the fresh fuel, present options of adulterating the material with other plutonium waste and discuss security procedures now applied to storage of the material at LANL and which would be terminated on disposal as waste in WIPP. For now, the material must remain in secure storage at PF-4, according to SRS Watch.

The DOE environmental document in which the MOX-disposal plan is briefly mentioned is a "supplement analysis" on environmental impacts of plutonium pit production at Los Alamos. The document, released in late August 2020 (and linked below), states that the unused MOX fuel would be disposed of as transuranic waste (TRU). WIPP is the site which receives TRU waste (plutonium-contaminated waste).

PF-4 provides storage for SNM including unirradiated fuel rods and materials that were fabricated in support of the Mixed Oxide lead test assembly program. (page 19)

Repackaging of the MFFF fuel rods discussed in Section 2.2.4 above would, conservatively, generate up to 200 TRU drums or 54 cubic yards (LANL 2020). This activity would not cause an exceedance of the 2008 LANL SWEIS estimate for TRU waste. (page 56)

“The environmental analysis so far conducted on the disposal of the plutonium fuel is totally inadequate and a full EIS must be conducted before its repackaging and shipment to WIPP takes places,” said Tom Clements, director of SRS Watch. “Given that direct disposal of unirradiated MOX pellets is unprecedented, a through EIS that reviews need for the proposal as well as security and environmental implications is mandated,” added Clements.

Disposal of the MOX pellets containing weapon-grade plutonium is highly unusual and would result in the termination of “safeguards” on the weapon-grade plutonium in the fuel pellets, resulting in less monitoring upon its disposal. “At a minimum, the MOX pellets should be adulterated in some way or be mixed with TRU waste planned to be shipped from Los Alamos to WIPP,” according to Clements. “As the MOX pellets contain enough purified plutonium for perhaps 10 nuclear weapons, steps must be taken to prevent access to the material during both its repackaging and disposal as waste,” added Clements.

In 1997, DOE prepared a “non-proliferation and arms control assessment” of the plutonium disposition program, including MOX fuel use. (<https://www.osti.gov/servlets/purl/425259>.) “SRS Watch believes that a non-proliferation assessment on disposing of fresh MOX fuel in WIPP must be prepared by DOE in parallel with the requested EIS,” said Clements.

A DOE document from 2015 - linked below - gives details about the MOX fuel which was fabricated from purified plutonium oxide produced at LANL: “The Pu oxide produced by the Actinide Recovery and Integrated Extraction System (ARIES) at LANL was sent to France in the summer of 2004 where it was used to manufacture MOX fuel assemblies. Four FS65 containers loaded with MOX fuel assemblies fabricated in France were delivered to Catawba Nuclear Power Station in South Carolina in April 2005. The four fuel assemblies were placed in the Catawba Unit 1 reactor.”

The 2015 document confirms that unused MOX is now stored at LANL: “Two additional FS65s included in the shipment from France contained excess fuel rods that were sent to LANL for storage until the MOX Fuel Fabrication Facility (MFFF) at the Savannah River Site (SRS) could accept them. This material comprised 713 kilograms of Uranium and 28 kilograms of Pu. The extra fuel material would be used to feed the pellet fabrication process at MFFF. Currently, LANL performs periodic visual inspections and monitoring of the FS65s.”

As the NNSA’s poorly managed MOX project was terminated in 2018, it is believed that none of the pellets were shipped to SRS but a small amount may have been shipped to Oak Ridge National Lab to be archived as samples. In the 2015 document, DOE outlined the alternative of disposal in WIPP: “....sending the fuel rods to WIPP in a waste acceptance-compliant configuration will require reducing the length of the fuel rods so that they will fit into an already approved WIPP container. Either the pipe overpacks (POCs) or criticality control overpacks (CCOs) are the recommended packaging options for disposition at WIPP.”

Clements of SRS Watch observed the sea shipment of the purified plutonium out of the port of Charleston, SC in 2004, bound for France. In France, Clements observed the arrival of the US plutonium in the port of Cherbourg and followed the plutonium shipment across France to the MELOX MOX fabrication facility in the south of France. Likewise, he observed the arrival of the MOX into the Charleston harbor in April 2005 and followed specialized DOE trucks carrying the MOX as they headed to

the Savannah River Site on Interstate-26 before going on to Catawba reactor in South Carolina or LANL. (See photo linked below of 2005 MOX transport departing from the U.S. Navy base in Charleston.)

SRS stores 11.5 metric tons of plutonium, which includes 0.7 MT of unirradiated MOX fuel from the closed Fast Flux Test Facility (FFTF) at Hanford but there is no known plan to dispose of that material directly in WIPP though the option may be under consideration. "If disposal of the FFTF MOX is being considered for WIPP, that could be analyzed in an EIS along with the fresh MOX at LANL," said Clements.

Meanwhile, it is anticipated that DOE's National Nuclear Security Administration could soon release a final Environmental Impact Statement on the unneeded production of plutonium pits in the proposed SRS Plutonium Bomb Plant in South Carolina. That facility would be used to produce 50 or more pits per year for new nuclear weapons and for around 2500 existing weapons, a project not simply to maintain a deterrent force but in order to keep the U.S. on the dangerous footing to fight a large-scale nuclear war. NNSA has confirmed a final EIS will be issued, followed a minimum of thirty days later with a "Record of Decision."

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DOE's Amended Record of Decision for the Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory, Los Alamos, NM, Federal Register, September 2, 2020: <https://www.govinfo.gov/content/pkg/FR-2020-09-02/pdf/2020-19349.pdf>

DOE's Final Supplement Analysis (August 2020) for the Site-Wide EIS for Continued Operation of Los Alamos National Laboratory, DOE/EIS-0380:
<https://www.energy.gov/sites/prod/files/2020/09/f78/final-supplement-analysis-eis-0380-sa-06-lanl-pit-production-2020-08.pdf>

ARIES Oxide Production Program Legacy Risk Reduction Project, FS65 Disposition Option Report, September 25, 2015 - states that the unirradiated MOX contains 28 kg of plutonium:
<https://permalink.lanl.gov/object/tr?what=info:lanl-repo/lareport/LA-UR-15-26533>

Application by DOE to Nuclear Regulatory Commission to export plutonium from LANL to France, via the port of Charleston, SC, for "Fabrication of four MOX lead assemblies to be returned to the U.S. for testing in commercial reactors," Federal Register, October 27, 2003:
<https://www.govinfo.gov/content/pkg/FR-2003-10-27/pdf/03-27011.pdf>

Surplus Plutonium Disposition Supplemental Environmental Impact Statement, April 2015
https://www.energy.gov/sites/prod/files/2018/02/f48/DOE%202015_SPD%20SEIS%200283-S2.pdf

Photo by DOE: Drums containing downblended SRS plutonium, on surface at WIPP on October 1, 2015, as observed by Tom Clements of SRS Watch (foreground), before the drums were taken underground: https://srswatch.org/wp-content/uploads/2019/08/1147925_orig.jpg

Photo: Tracking arrival of MOX "lead test assemblies" (LTAs) fabricated at MELOX in France as DOE secure vehicles and escorts depart Joint Base Charleston (Naval Weapons Station, Charleston South Carolina) in April 2005, after arrival by sea on PNTL vessel. Test rods were taken to the Catawba reactor unit 1 and other unirradiated rods taken back to Los Alamos National Lab, from which 123 kg fresh plutonium had been shipped cross-country for export via Charleston, SC to Cherbourg, France. Photo ©Tom Clements/SRS Watch. Photo posted here: <https://srswatch.org/wp-content/uploads/2020/09/MOX-LTA-transport-April-2005-768x576.jpg>