

Blue Ridge Environmental Defense League

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March 12, 2012

Ms. Sachiko McAlhany
SPD Supplemental EIS
NEPA Document Manager
U.S. Department of Energy
P.O. Box 2324
Germantown, MD 20874-2324.

RE: SPD Supplemental EIS, DOE/EIS-0283-S2

Dear Ms. McAlhany:

On behalf of the Blue Ridge Environmental Defense League, I write to comment on the Surplus Plutonium Disposition Supplemental Environmental Impact Statement noticed in the Federal Register on January 12, 2012 (77 FR 1920). We oppose the expansion of radioactivity-producing activity at the Savannah River Site in South Carolina and at the Los Alamos National Laboratory in New Mexico.

Background

Under the four alternatives now proposed in this EIS, the US Department of Energy (DOE) would install or expand plutonium pit disassembly and/or conversion capability at one or more of the following locations:

- New Mexico: Los Alamos National Laboratory Technical Area 55 (TA655)
- South Carolina: Savannah River Site's H-Canyon/HB-Line, K-Area, and MFFF

Regarding its preferred alternatives, the DOE states that plutonium fuel would be used at commercial nuclear power reactors operated by the Tennessee Valley Authority; specifically, three boiling water reactors at Browns Ferry, Alabama and two pressurized water reactors at Sequoyah near Soddy-Daisy, Tennessee. To manufacture this fuel, the DOE plans pit disassembly and conversion of plutonium metal at a yet undetermined combination of facilities at TA-55, K-Area, H-Canyon/HB-Line and MFFF. In DOE parlance the MFFF is the mixed-oxide fuel fabrication facility, also known as plutonium fuel fabrication facility, and is currently under construction at SRS. Finally, DOE posits the disposal of plutonium unsuitable for use in commercial power reactors at the Waste Isolation Pilot Plant in New Mexico.¹

Comments

We oppose the reprocessing of plutonium as civilian nuclear power fuel because it presents unsupportable risks to public safety and the environment. Plutonium fuel requires transportation of weapons grade plutonium and fuel across thousands of miles of open country, making transport vulnerable to terrorist attacks and theft. Manufacturing

¹ 77 FR 1920

plutonium fuel would create vast quantities of radioactive waste. The plutonium fuel contractor for the US estimates *annual* waste outputs of up to 21,000 gallons of high activity radioactive waste containing 84,000 Curies of americium, 46,000 gallons of plutonium- and uranium-bearing wastes, and 385,000 gallons of low-level radioactive waste.²

Radioactivity around SRS rising, health impacts mounting

A recent report by Joseph J. Mangano, MPH MBA, finds that in the past decade, levels of most types of radioactivity at the Savannah River Site are rising, as are rates of radiosensitive diseases. The 75-page report³ (attached to these remarks) involved a year-long study of data from the U.S. Energy Department, state and federal environmental regulators and health departments in Georgia and South Carolina. Among the findings were indicators that radiation levels are gradually increasing, rather than decreasing, and that "radiosensitive" diseases and deaths—including infant and fetal deaths, thyroid and lung cancers and leukemia—exceeded the national average in the five-county area surrounding SRS, where about 2,000 excess morbidities and mortalities have occurred since 2002. In brief, Mangano's principal findings:

1. From the late 1990s to the 2000s (when EM activities reached full capacity), emissions and environmental concentrations of radioactivity in or near SRS increased for 71% of measures with complete data. With nuclear weapons manufacturing at an end and environmental remediation attempting to reduce radioactivity, this finding differs from the expectation that levels would steadily decrease over time.
2. In the five counties within 25 miles of SRS, with a current population of 417,000, rate increases in 96% of radiosensitive diseases or causes of death exceeded that of the U.S. In 20, the increase was statistically significant. The categories included were those affecting the fetus (infant deaths, fetal deaths, low weight births); cancer among children and the very elderly; radiosensitive cancers (thyroid, female breast, and leukemia); and those conditions in which previous articles had detected a risk among SRS workers (leukemia, lymphoma, lung cancer, myeloma, and non-cancerous lung diseases).
3. Approximately 2,000 excess deaths and cases of disease occurred in the five counties during the latest nine year period.

Pursuant to NEPA—specifically, Section 102 42 U.S.C. 4332—DOE must utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment. Therefore, before proceeding with new facilities at SRS, the DOE must ensure that future activities proposed in this EIS do not undermine the safety and health of local residents and workers.

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

³ *Assessing Changes in Environmental Radioactivity and Health Near the Savannah River Site*, Joseph J. Mangano, Executive Director, Radiation and Public Health Project, February 22, 2012

Commercial Nuclear Reactors are Unsuitable for Plutonium Fuel

Originally, DOE had contracted with two electric utilities to use plutonium fuel in their power plants: Duke Energy and Virginia Power. But both have withdrawn their reactors from the program. In 2008, Duke Energy aborted its experiment with plutonium fuel. Tests of plutonium fuel scheduled to run for four-and-a-half years in Duke's Catawba nuclear reactor were ended after three years. The fuel assemblies grew abnormally long in the reactor, indicating a safety hazard in the MOX/plutonium fuel.⁴

Now TVA has stepped into the breach. There are known differences between plutonium fuel and conventional fuel which occur during accidents involving the loss of cooling water. Slumping and ballooning of zirconium clad fuel has been observed in French fuel tests, altering core geometry and restricting water flow. Sequoyah's nuclear reactors utilize ice condenser containments, baskets of borated ice, to reduce heat and pressure in the event of an accident. Sandia National Laboratories evaluated the reactor containment structures at similar to those at Sequoyah Units 1 and 2 and found that if an accident involving hydrogen ignition occurs, the concrete containment will almost certainly fail.⁵ Such systems are particularly vulnerable to reactor sump clogging; numerous problems with ice condensers have been identified during the last two decades of operation.

Further, of great concern in the extant EIS analysis is the potential expansion of the plutonium fuel program to utilities in addition to TVA: "DOE will analyze the potential environmental impacts of irradiating MOX fuel in a generic reactor in the United States to provide analysis for any additional future potential utility customers." 77 FR 1922.

The critical problem is that plutonium is fundamentally different from uranium. With plutonium fuel loaded into any commercial reactor, the power station becomes more dangerous because plutonium releases energy in a different way than uranium. Plutonium has a higher neutron flux, meaning higher energy particles at higher speeds. This and other nuclear phenomena break down metal reactor parts quicker; a process called embrittlement. This weakening of metal components would be accelerated in any reactor using plutonium fuel. Greater embrittlement means the reactor vessel may fail under circumstances which would otherwise not cause a problem. If and when failure happens and radioactive materials are released from the plant, more dangerous radionuclides are released from a reactor containing plutonium fuel, including greater quantities of radioactive elements which pose hazards to human health.

Public attention has been drawn to the higher actinide inventories available for release from MOX than from conventional fuels. Significant releases of actinides during reactor accidents would dominate the accident consequences.

⁴ Duke Energy's report to the NRC, ADAMS digital library: ML081650181, June 10, 2008, available at www.nrc.gov/reading-rm/adams/web-based.html

⁵ NUREG/CR-6427, Assessment of the Direct Containment Heating Issue for Plants With Ice Condenser Containments, April 2000

Models of actinide release now available to the NRC staff indicate very small releases of actinides from conventional fuels under severe accident conditions. (emphasis added)⁶

No matter the utility or type of reactor, plutonium fuel has greater quantities of plutonium and other hazardous radioactive isotopes such as Americium 241 and Curium 242⁶ actinide elements⁶ which would cause additional harmful radiation exposure to the public.

Nuclear Contractor at SRS Disregards Health and Safety

The principal contractor for the plutonium fuel factory, and most likely for the proposed additional operations contemplated by this EIS, is Shaw AREVA MOX Services, formerly known as Duke Cogema Stone and Webster. A report issued by the Safe Energy Communications Council before the name change entitled *The COGEMA File* recommends that, given the company's abysmal record, COGEMA should be barred from doing business in the United States. The report states, "COGEMA has chosen to disregard findings of extreme contamination and health effects resulting from its own reprocessing activities and has refused to abate its discharges as requested by European governments and mandated by international laws and treaties."⁷ Pursuant to NEPA⁶ specifically, Section 102 42 U.S.C. 4332⁶ which states all federal agencies shall: "identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by Section 202 of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;"⁶ (emphasis added), we recommend that the DOE do an updated review the track record of this company in the proposed area of work before making a final decision.

Russian-American Security Agreement: No Plutonium Fuel

For over a decade, the Blue Ridge Environmental Defense League has opposed the reprocessing of plutonium as civilian nuclear power fuel because it presents unsupportable risks to public safety and the environment. For about as long, we have worked with Russian non-governmental organizations who also support dismantling of nuclear weapons but who also call for abolition of the plutonium fuel program. Our joint opposition to plutonium fuel programs is based on the negative health and safety aspects of plutonium fuel in commercial nuclear power plants. Vladimir Slivyak, Ecodefense co-chair, stated:

Using plutonium as a fuel for NPPs [nuclear power plants] may lead to nuclear accidents and plutonium pollution of the Russian territories. It also gives the

⁶ Letter from Advisory Committee on Reactor Safeguards to US Nuclear Regulatory Commission Chairman, May 17, 1999

⁷ "The COGEMA File, Incidents impacting the environment, health and the law by the French nuclear company, COGEMA," by Linda Gunter, Safe Energy Communication Council, October 1, 2002

possibility of nuclear material theft and proliferation. Plutonium must be immobilized and never used again.⁸

Because the plutonium-MOX fuel plan necessitates shipping nuclear weapons-usable plutonium over enormous distances, it might well increase the likelihood that such material could fall into the hands of terrorists. A report prepared by a special commission of International Physicians for the Prevention of Nuclear War and the Institute for Energy and Environmental Research states:

Using plutonium as fuel on a large scale would be difficult to safeguard and would involve a high risk of diversion. In the case of plutonium from weapons, there would be a regular traffic of plutonium oxide from dismantlement and storage sites to fabrication facilities and reactors, with the risk of attack along transportation routes.⁹

The U.S. National Academy of Sciences stated that shipments of plutonium fuel will require security measures equivalent to those needed for transport of nuclear weapons. Harvard Law School and the United Kingdom Royal Commission on Environmental Pollution have also raised concerns about the security measures needed for plutonium as an article of commerce.

Conclusion

For the reasons detailed above and more, we oppose plutonium fuel.

Thank you for the opportunity to comment on this matter.

Respectfully,

A handwritten signature in black ink that reads "Louis A. Zeller". The signature is written in a cursive style and is followed by a horizontal line.

Louis A. Zeller
Executive Director, Blue Ridge Environmental Defense League

Attachment: *Assessing Changes in Environmental Radioactivity and Health Near the Savannah River Site*

⁸ Antiatom.ru, downloaded May 28, 2003 <http://www.antiatom.ru/entext/030528anc.htm>

⁹ International Physicians for the Prevention of Nuclear War and The Institute for Energy and Environmental Research, *Plutonium: Deadly Gold of the Nuclear Age*, International Physicians Press, Cambridge Massachusetts, 1992, p.133-134