

EDI Comments to the Department of Energy on The U.S. Department of Energy Draft Supplement Analysis on Two Proposed Shipments of Commercial Nuclear Fuel to Idaho National Laboratory for Research and Development Purposes, 2015. (DOE/EIS-0203-SA-07)

The Proposed Action in a Nutshell:

The U.S. Department of Energy (DOE) is proposing to transport, in two separate truck shipments, small quantities of commercial power spent nuclear fuel (SNF) to the Idaho National Laboratory (INL) Site for research . The first shipment, which could take place as early as August 2015, would come from the Byron Nuclear Power Station in Illinois, and would consist of one cask of 25 SNF rods, totaling approximately 0.04 to 0.05 metric ton of heavy metal (MTHM), or approximately 40 to 50 kilograms (88 to 110 pounds) of heavy metal. The second shipment, which could take place as early as January 2016, would come from the North Anna Nuclear Power Station in Virginia, and, likewise, would consist of one cask of 25 SNF rods, totaling approximately 0.04 to 0.05 MTHM.

*Upon receipt, the SNF rods would be transferred directly into a hot cell in the Materials and Fuels Complex (MFC) to begin the research activities. This research is intended to explore the technical, economic, and non-proliferation aspects of electrometallurgical processing of commercial light water reactor fuels. DOE claims in the SA that electrometallurgical processing (also known as pyroprocessing) has **potential** benefits nationally and internationally as a means of dealing with SNF inventories and that it is important for DOE to conduct these studies to maintain U.S. expertise in this area and ensure that if or when the technology is implemented, it is implemented responsibly with appropriate safeguards in place.*

Pyroprocessing has been studied for years and has been dismissed in the US largely because it is an expensive way to achieve very little reduction in deep geologic repository needs. They admit that it only has potential benefits; they know it has many disadvantages and the main benefits are research dollars and keeping the perception alive that they can make significant progress in addressing nuclear waste. If pyroprocessing really held promise, they would have been spending much more money on it and long before now.

EDI Comments:

The DOE's draft Supplement Analysis on Two Proposed Shipment of Commercial Nuclear Fuel to Idaho National Laboratory for Research and Development Purposes ¹fail to consider new information relevant to its claims.

¹ Supplement Analysis on Two Proposed Shipments of Commercial Nuclear Fuel to Idaho National Laboratory for Research and Development Purposes, [www.id.energy.gov/insideNEID/Public Involment.htm](http://www.id.energy.gov/insideNEID/Public%20Involment.htm). Sent to Jack Depperschmidt, U.S. Department of Energy, Idaho Operations Office, 1955 Fremont Avenue, Idaho Falls, Idaho 83415-1222 or by email at: comnfsa@id.doe.gov.

Now that DOE has demonstrated that their safety analysis and hazard mitigation is not representative or conservative for actual events: the Waste Isolation Pilot Plant (WIPP) accidents² and INL ZPPR accident at INL's Materials and Fuels Complex (MFC),³ the NEPA document cannot simply pretend that the emperor is wearing clothes.

DOE accident investigation reports for both WIPP and ZPPR point to very systemic problems. Until DOE can answer why WIPP was found to have ineffective safety programs, why should any DOE safety analysis be believed? For ZPPR, safety mitigations were actually degraded rather than corrected when the accident likelihood was recognized as being much higher. ZPPR management failed to put protections in place despite the safety oversight chairman pleading that more be done to protect workers. . .and then blamed the workers who were not responsible for planning the work or operating the facility.

Regarding accident risks, there have been grossly inadequate criticality controls at MFC, lack of completed seismic performance analysis, fire protection issues and other safety issues. The NEPA document must address the current status of these and all safety issues at MFC as well as DOE's demonstrated inability to prepare adequate safety analysis and hazard mitigation controls.

DOE has demonstrated grossly inadequate emergency response, both at WIPP and INL's ZPPR. No oversight assessment of MFC emergency management capability has been conducted by DOE headquarters for decades, if ever.

The document neglects to mention the inoperability of WIPP at this time and the uncertainty of if and when its operations will resume and if its storage capacity will be affected by the contamination in the facility.⁴

DOE has continues a tradition of a complete lack of radiation worker advocacy. Worker's radiation records are still undercutting the actual doses and dose estimate calculations are not made available without conducting a Freedom of Information Act request. Methods used for determining radiation doses to personnel are not transparent and are performed with great emphasis on lowering the doses to protect the operating contractor's reputation.

DOE continues to avoid updating knowledge of radiation health effects. One significant way has been to avoid epidemiology that accounted for contaminated drinking water. Regarding water quality discussed in the Supplemental Analysis, INL's drinking water contained 5 times the

² DOE accident investigation reports have found virtually every aspect of WIPP operations to be seriously flawed. See www.wipp.energy.gov.

³ Department of Energy, Office of Health, Safety and Security (HSS), Accident Investigation Report, "Plutonium Contamination in Zero Power Physics Reactor Facility (ZPPR) at the Idaho National Laboratory" accident 11/8/11 at the Materials and Fuels Complex (MFC). <http://energy.gov/hss/downloads/investigation-november-8-2011-plutonium-contamination-zero-power-physics-reactor>.

⁴ The Southwest Research and Information Center (SRIC) raises questions about WIPP capacity pointing out that additional panels are required to committed storage, see http://www.sric.org/nuclear/docs/WIPP_Status_03022015.pdf

maximum contaminant level at Central Facilities for many years yet DOE does not document this in any transparent manner. An incomplete set of contaminants was monitored, by choice. The monitored results for INL drinking water are largely obscured and since 1995 have been completely unavailable. Even if the drinking water monitored results, to estimate the actual contaminants would involve retroactively analyzing the radionuclides present, for example Iodine-129 which was present but not necessarily monitored. Chemical contaminants were also present. The chemical contaminants were not monitored for many years although DOE knew what it was dumping in disposal wells at these facilities. The EPA loophole for non-community wells has been exploited to allow DOE's chronically contaminated drinking water wells to not report radionuclide data to the Idaho DEQ.⁵

The supplemental analysis has chosen to assume special waste disposal paths outside those typical for pyroprocessing waste at INL. They assume they will ship waste to WIPP and offsite to Nevada's low level waste dump. They have deliberately avoided mention of the MFC Radioactive Scrap and Waste Facility (RSWF) and an updated status of relative to monitoring deficits and waste dispositioning from this temporary metal encased buried waste.

Waste streams from highly radioactive waste from air filters at MFC as well as waste from the RSWF would typically go to the Radioactive Waste Management Complex⁶ or its proposed replacement facility for permanent burial. The radioactive waste is often long-lived radioactive waste that will not decay before leaching into the Snake River Plain Aquifer and migrating outside of the INL. The need to and plan for putting existing RSWF waste in the new RWMC replacement facility, the RH-LLW facility is deliberately avoided.

They have deliberately avoided mention radiation ingestion doses from the leaching of radioactive wastes from RWMC and its replacement facility at INL for thousands of years from waste leaching into the aquifer.^{7 8}

The NEPA document continues a tradition of deception by including some brief and inadequate statements about INL's RWMC cleanup status, never documenting how much of the non-targeted waste will not be removed. And never mentioning the extent of contamination that will trickle into the aquifer for thousands of years and the estimated doses of 30 to 100 mrem/yr. With an assumed infiltration rate of 1 cm/yr, the 100 mrem/yr ingestion doses that

⁵ Environmental Defense Institute report by Tami Thatcher, *The Hidden Truth About INL Drinking Water*, June 2015, <http://www.environmental-defense-institute.org/>

⁶ See the Administrative Record at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents for documents associated with this cleanup action, including "Record of Decision" documents and EPA mandated Five-year Reviews at <http://ar.inel.gov>

⁷ U.S. Department of Energy, 2007. Performance Assessment for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11243. Idaho National Laboratory, Idaho Falls, ID and U.S. Department of Energy, 2008. Composite Analysis for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site. DOE/NE-ID-11244. Idaho National Laboratory, Idaho Falls, ID. (<https://www.inl.gov/about-inl/general-information/research-library/> Search the DOE-ID Public Reading Room for the reports.

⁸ US Department of Energy, "Environmental Assessment for the Replacement Capability for Disposal of Remote-Handled Low-Level Radioactive Waste Generated at the Department of Energy's Idaho Site," Final, DOE/EA-1793, December 2011. <http://energy.gov/sites/prod/files/EA-1793-FEA-2011.pdf>

continue for thousands of years are documented in the Department of Energy's performance assessment and composite analysis, DOE/NE-ID-11243 and -11244. These documents were deliberately kept out of public view since 2008 until a Freedom of Information Act request by Environmental Defense Institute was granted recently.

The extent of americium and plutonium that will actually be removed is still being kept from public view and no attempt is made to remove all the long-lived and radiation dose-significant waste. The radiation doses for the RWMC never include the population collective dose. Unrealistic soil cap performance has been assumed for thousands of years with the explanation that 5 year CERCLA monitoring and cap maintenance will continue forever.

In pointing to the Yucca Mountain EIS (DOE/EIS-0250F-S1) the Supplemental Analysis wrongly is expecting us to assume that Yucca Mountain will be opened as though there were no impediments. But it may never be constructed and opened.

Casks are said to be designed to survive a 1475 degree Fahrenheit fire for 30 minutes yet in recent years there have been many train fires exceeding this duration and temperature. The number of train accidents and accident severity in recent years is new information that must be considered and is flawed in the Yucca Mountain EIS. The NRC and DOE have yet to come to grips with recent train fire severity which would affect any repository and could affect truck or train shipments.

Regarding air quality and human health, the cited report for Idaho National Laboratory Site Environmental Report Calendar Year 2013 has huge quality problems and has underestimated the radiation dose from INL air emissions.⁹ The radioactive half life of americium and other isotopes is given incorrectly and the plutonium air emissions are greatly understated relative to NESHAPs and CERCLA reports of RWMC Accelerated Retrieval radioactive air emissions.^{10 11} The entire INL report (2014b) must be redone and a news release of the errors is needed.

The Idaho Settlement Agreement statement in part F item 1: Establishment of INEL as DOE Spent Fuel Lead Laboratory is a relevant point included in the attached documents.¹² The DOE Spent Fuel program was transferred out of INL and it was defunded in 2009. Problems include the issue of inability to maintain databases of DOE spent fuel and inability to maintain expertise was discussed in a recent years Spent Fuel Technical Safety Review Board.¹³ Why is this ignored aspect of the Idaho Settlement Agreement not acknowledged? It

⁹ Gonzales-Stoller Surveillance, LLC, INL Annual Site Environmental Report for 2013 (Chapter 4 and 8) at <http://www.gsseser.com/Annuals/2013/ReportIndex.htm>

¹⁰ Department of Energy, National Emission Standards for Hazards Air Pollutants Calendar Year 2013 INL Report for Radionuclides, DOE/ID-11441, July 2014. <http://www.osti.gov/scitech/biblio/1149028>

¹¹ Prepared for Department of Energy Idaho Operations Office, Phase 1 Interim Remedial Action Report for Operable Unit 7-13/14 Targeted Waste Retrievals, DOE/ID-11396, Revision 3, October 2014 <https://ar.inl.gov/images/pdf/201411/2014110300960BRU.pdf>

¹² See more about Idaho's Settlement Agreement at <https://www.deq.idaho.gov/inl-oversight/oversight-agreements/1995-settlement-agreement.aspx>

¹³ US Nuclear Waste Technical Review Board meeting in Idaho Falls August 2014, see minutes at <http://www.nwtrb.gov/meetings/2014/aug/14aug6.html>

was ignored because there was no specified remedy or penalty for not performing as specified in the Idaho Settlement Agreement.

Regarding the new information discussion for radiation dose conversion factors, the radiation standard still fails to acknowledge that it is not protective of the most vulnerable populations, the unborn, children and the elderly. BEIR-VII research shows increased risk to vulnerable populations and newer research amplifies this. The radiation protection criteria as well as the dose conversion factors are not protective of human health.¹⁴

For these reasons cited, the DOE's Supplement Analysis is inadequate. The old, out-of-date, incomplete, and flawed documents cited by the supplemental analysis are little more than a charade and cannot be considered appropriate, sane or reasonable to address the proposed action.

Comments submitted by Tami Thatcher, July 13, 2015

¹⁴ Arjun Makhijani PhD, Institute for Energy and Environmental Research, The Use of Reference Man in Radiation Protection Standards and Guidance with Recommendations for Change, Rev 1 April 2009.
<http://ieer.org/resource/reports/reference-man-radiation-protection2/>