

INEEL NEWS
Environmental Defense Institute
News and Information on
Idaho National Engineering and Environmental Laboratory

March 2000

Volume 11 Number 2

Environmental Groups Call for Halt to Restart of High-Level Radioactive Waste Incinerator

The Environmental Defense Institute and Keep Yellowstone Nuclear Free citing a history of major environmental and safety problems, called on the Department of Energy to suspend the restart of a high-level radioactive waste incinerator, at the INEEL. The DOE plans to restart the operation, also known as the New Waste Calcine Facility on March 8th and plans to operate it until the end of June to perform process tests.

The risks of restarting this dangerous operation are unacceptably high for the residents, workers and the environment. DOE is simply taking advantage of a regulatory loophole to perform risky experiments that they won't be able to do after June, when new Clean Air Act standards take affect. This facility has a disturbing history of accidents, environmental contamination and excessive worker exposures. According to official records obtained from the Energy Department between 1991 and 1999:

- There were at least 18 incidents where equipment, and filter failures, power outages, and poor conduct of operations resulted in excessive atmospheric releases of radioactive aerosols. In some cases there was widespread and severe contamination. For example, in April 1992 employees were forced to remain indoors after an accidental release from the main stack went beyond the plant boundary. Five to six acres of land had to be decontaminated.
- In 1999, an explosion at the Calciner caused worker over exposures, and significant damage to the facility due to negligence by the contractor and the DOE.
- There were at least six fires at the ICPP (INTEC). Inspectors found several instances where fire and radiation alarms were shut off.
- There were at least 18 incidents where workers were overexposed to radiation.

DOE safety oversight teams have reported a continuing decline in safety. According to a September report by the DOE Headquarters Office of Environment, Safety and Health, "Workplace safety at INEEL has deteriorated since 1994 . . . corrective action plans found that deficiencies were not resolved and that lessons learned from previous accidents were not being effectively applied. In environmental management and controls, data indicate weak regulatory compliance and inadequate, short-term, quick fix solutions . . . one fifth of all INEEL occurrences in 1997 were related to radiation protection (personnel contamination) and environmental management occurrences have increased by one third from 1994 to 1997."

DOE's contractors have been repeatedly fined for environmental and safety non-compliance. Since 1994 the State of Idaho issued four Notices of Violation for Non Compliance resulting in more than \$1 million in penalties. During that time period there were 26 DOE enforcement actions.

- In the last five years, the Defense Nuclear Facility Safety Board issued nine reports on the Calciner and related high-level liquid waste evaporator. All five reports challenge the Calciner's readiness to restart operations. The June 2, 1997 report "commented on the failure of the DOE Idaho Operations Office to identify inadequacies in the contractor's state of readiness before certifying readiness for operations and commencement of the Operational Readiness Review for the [Calciner] high-level liquid waste evaporator." See Exhibits
- The High-level Waste EIS says that "technical constraints, have hindered DOE's efforts to sample off-gas emissions from the New Waste Calcine Facility," so there is uncertainty about what is going out the stack.

The operation of the high-level waste calcine facility has significant relevance to the decision to grant environmental permits to proposed Advanced Mixed Waste Treatment Project (AMWTP) because both facilities involve the incineration of very dangerous radioactive substances. According to a recent discussion with officials at the Region X Office of the Environmental Protection Agency (EPA), we learned that since 1982,

the INEEL Calciner incinerator operated on an interim status, under a 1992 "Consent Order" later amended in 1994 and 1998. The Department of Energy was not held to the requirements under Part B of a RCRA permit. DOE only had to meet vague requirements for the past eighteen years under a regulatory regime that is best described as "hands off." Thus, one of the most dangerous hazardous waste incineration facilities in the country was allowed to operate between 1982 and 1990 with *ad hoc* RCRA regulatory requirements that were not tied to quantifiable performance standards normally required for hazardous waste incinerators.

We find this situation highly disturbing. The incineration of high-level radioactive wastes is an ultra hazardous activity under federal law. Its risks to human health and the environment cannot even be remotely compared to the incineration of municipal wastes, which were subject to more stringent regulatory requirements over the past 18 years.

The restart of the high-level waste Calciner facility comes at a time when the State of Idaho is deciding on environmental permits for the proposed AMWTP, which will involve the incineration of plutonium contaminated wastes. DOE attempted to permit the mixed low-level incinerator at INEEL called the Waste Experimental Reduction Facility (WERF). It failed the first trial burn and presumably failed the second because DOE announced that it planned to shut WERF down because of the costs required to bring it into compliance with the new standards.

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The lax regulation and troubling operation of the high-level radioactive waste incinerator at INEEL do not bode well for the proposed Plutonium Incinerator to be operated by British Nuclear Fuels Limited (BNFL). There should be an independent review of the regulation and operation of the high-level waste incinerator by experts not affiliated with the DOE, before permits are granted for the Advanced Mixed Waste Treatment Project.

Since the early 1960's the Idaho National Engineering and Environmental Laboratory operated high-level radioactive waste incineration or calcining facilities for the purpose of converting these wastes to a solid and more stable form for storage. The liquid high-level waste was generated from the chemical separation of highly enriched uranium and other materials from spent naval reactor fuel at the Idaho Chemical Processing Plant. The process involved a technology known as calcination. Calcination of high-level radioactive wastes involves the combustion of kerosene and use of an air fluidized-bed to dry out the nitric acid high-level wastes. In effect calcination is a technology to bake away the liquids from the waste. In doing so, this process involves the handling of extremely dangerous radioactive wastes – which in minuscule quantities can be lethal.

The current New Waste Calcine Facility was brought on line in 1982 and ran four "campaigns," the most recent one between May 1997 and May 1999. DOE wants to restart the Calciner and run it through June of 2000, because the Department claims emission and waste characteristic data are needed to support an environmental permit application which DOE must submit to the State of Idaho in order to continue running the facility in the future.

The State of Idaho and the Environmental Protection Agency have been granting questionably legal extensions for the Calciner to continue to operate. It is time that the rule of law is brought to bear on these most hazardous of operations that have potential for significant harm to the downwind populations.

At the minimum, EPA should conduct a special review of the State of Idaho's Consent Order to determine if it is adequate with respect to minimal requirements for measuring airborne pollutants at the Calciner. The Calciner facility should not be restarted unless this is done.

It is our opinion that the risks of restarting of the Calciner, in order to determine a technological proof of concept for high-temperature calcination, are unacceptably high for the residents, workers and the environment. EPA and the State of Idaho should perform a through review of this situation. DOE is simply taking advantage of a regulatory loophole to perform experiments that they won't be able to do after June. What makes these experiments safe now, when after June they won't be considered safe in the context of compliance with new Clean Air Act standards?

The restart of the Calciner poses the same problems as the Plutonium Incinerator. They aren't tracking the contaminants of concern. It is not enough to ask if they are monitoring, but what are they monitoring for? The Calciner offers a real-life example of the nonexistence of regulatory enforcement of environmental laws on the part of the State and the EPA. By allowing DOE to operate the Calciner for 18 years without a full RCRA permit offers the public insight into what can be expected with the Plutonium Incinerator compliance with regulations.

What can you do?

Comments on the Calciner can be submitted as part of the INEEL High-level Waste Environmental Impact Statement. Write to Tom Wichmann, Document Manager, DOE Operations Office, 850 Energy Drive, MS-1108, Idaho Falls, ID 83401-1563. Also send copies to Brian Monson, Idaho Division of Environmental Quality, 1410 North Hilton, Boise, Idaho 83706-1290; and Chuck Finley, Environmental Protection Agency, 1200 Sixth Av. Seattle, WA 98101. ☺

More Plutonium is Slated for the Plutonium Incinerator than DOE is Publicly Acknowledging

The Department of Energy (DOE) and contractor, British Nuclear Fuels Ltd., plan to start construction this Spring on a \$1.2 billion plutonium incinerator at INEEL. State of Idaho Permits to Construct and DOE's Environmental Impact Statement only acknowledge a fraction of the plutonium that is candidate waste slated for this new facility called the Advanced Mixed Waste Treatment Plant.

This startling revelation occurred while Environmental Defense Institute researchers were preparing official comments for the record on the State Hazardous Waste Permits. A few years ago DOE was obliged to conduct an inventory of its nuclear weapons grade material (highly enriched uranium and plutonium) as part of a nuclear weapon treaty provision that required full disclosure of warhead and fissile material stocks. This inventory which compared what was "on the books" with the "actual physical count," resulted in the Department acknowledging that over 2.7 metric tons of plutonium were unaccounted for. By any standards, this represents an enormous amount of plutonium.

Plutonium is tracked more closely than any other known substance, not only because of its monetary value, but because of its destructive capabilities if in the hands of terrorists or rogue states. Additionally, the United States is a signatory to the Non-Proliferation Treaty that forbids transfer of nuclear weapon materials. For the time being, we give DOE the benefit of the doubt that its claims that the missing plutonium was not stolen are true.

The DOE was under enormous pressure to generate a credible explanation for the inventory discrepancies. Seven different DOE sites in the U.S. have plutonium inventories. Rocky Flats ranks second after Hanford for inventory differences between book inventory less physical inventory.

Since Rocky Flats shipped all of its plutonium contaminated waste to INEEL, Environmental Defense Institute researchers focused on this site. Up until the early 1970's, all the radioactive waste was dumped into shallow pits and trenches at the INEEL burial ground called the Radioactive Waste Management Complex. After the early 1970's, plutonium contaminated wastes were segregated into storage because of a new transuranic (TRU) waste category that forbid shallow burial.

The distinction between the buried waste and the stored waste is crucial because the Plutonium Incinerator Environmental Impact Statement (EIS) only considered the stored waste in its analysis. Buried in the EIS is a statement that acknowledges that the INEEL buried waste in the pits and trenches are also candidate throughput for the Plutonium Incinerator. By not including this buried waste in the analysis, the risk assessment that calculates what the probable radiation dose to the public resulting from incinerator operations, can only be considered

as grossly understated.

The stored TRU waste evaluated in the Plutonium Incinerator environmental study and State Permits contain 647,000 curies of radioactivity, including 473,600 curies of plutonium.¹ Although, DOE is not publically acknowledging the fact, its internal reports show the buried waste contains 11,000,000 curies² of radioactivity including 1,455 kilograms of plutonium from Rocky Flats alone.³ The total buried plutonium (2,160 kg) contains 700,400 curies of radioactivity.⁴ Even these totals are now known to be grossly understated due to recent revelations about Rocky Flats plutonium waste shipments to INEEL that never was recorded on the shipping records. The buried waste alone represents potentially 17 times more radioactivity to be processed than is considered in the Plutonium Incinerator environmental study or the applications for state and federal permits.

The radioactivity in the INEEL buried waste cited above is still significantly understated because it relies on original generators' shipping manifest records that are now known to be inaccurate. There were no checks at the INEEL dump to confirm the accuracy of the manifests because these were shipments between DOE facilities.

These shipping quantity discrepancies were revealed only in the last few years when DOE was forced to disclose where all its nuclear bomb material is located and give precise inventories. As it turned out, DOE could not account for 2,750.1 kg of plutonium.⁵ DOE's Rocky Flats Plant is singled out here as an example to demonstrate the significance of the discrepancies and how it impacts the proposed Plutonium Incinerator Permit to construct. The Rocky Flats plutonium shortfall represented 43% of the total DOE unaccounted inventory and it was recognized as the largest plutonium waste shipper to INEEL.

DOE's Rocky Flats Plant conducted a physical inventory of plutonium, compared it to the book inventory, and determined that 1,191.8 kg of plutonium was unaccounted.⁶ Part of this shortfall was attributed to an estimated 20% in the ductwork and glove boxes, and the remaining 80% shortfall was shipped to INEEL for disposal but was not included in the shipping manifests.⁷ Little or no waste characterization occurred at INEEL on shipments to the burial grounds. What records that were kept only reflect what the generator reported as container contents.

On February 6, 1996, then DOE Secretary O'Leary revealed that 1,191.8 kg of Plutonium could not be accounted for at Rocky Flats. An internal Rocky Flats report called "A Discussion of Inventory Difference, Its Origin and Effect," by N. J. Roberts says 200 to 300 kg of the unaccounted Plutonium (Pu) may be in holdup (in piping, duct-work, equipment and the like). Roberts thought Pu contained in waste sent to INEEL may have been understated by 600 to 800 kg.

On Feb 21, 1996, then Rocky Flats DOE manager Mark Silverman said that up to 80% of the total unaccounted for Rocky Flats Pu -- that is, up to 953 kg-- went to INEEL.

INEEL's original (understated) records show that 1,455 kg⁸ of all plutonium species containing 470,900 curies⁹ from Rocky Flats was dumped in the Subsurface Disposal Area. Therefore, the total Rocky Flats plutonium dumped in the INEEL Subsurface Disposal Area could be as much as 2,408 kg (1,455 kg originally reported + 953 kg unreported RF shortfall).

If the unreported Rocky Flats plutonium shortfall shipped to INEEL (953 kg) is added to what DOE previously thought was in the Subsurface Disposal Area (2,160 kg) it adds up to 3,113 kg in the SDA from all sources.

If the plutonium stored in the Transuranic Storage Area (TSA) (1,460 kg) is added to the buried volume (3,113 kg) the potential total plutonium slated for the AMWTP could be 4,573 kg from these two areas alone.

The curie content of this plutonium (473,600 in TSA) + (700,400 in SDA) + (308,400 Rocky Flats shortfall) = 1,482,400 curies. Since only three to 4 kg go into a nuclear warhead, this is enough for 1,143 nuclear bombs. This represents a major deficiency in BNFL's AMWTP throughput numbers, alone, and is sufficient evidence to reject the Permit.

It must be emphasized that the above discussion only looks at one contaminate - plutonium - and two candidate waste areas (stored and buried) as a means of evaluating the reliability of the Permit analysis. It is a reasonable assertion that all the other contaminants of concern and candidate waste locations are equally improperly characterized.

Candidate Plutonium Waste Slated for the Incinerator

Waste Location at INEEL	Curies	Mass in kilograms
Subsurface Disposal Area Original estimates	700,400	2,160
Subsurface Disposal Area Unrecorded Rocky Flats	308,400	953
Transuranic Storage Area	473,600	1,460
Totals	1,482,400	4,573

BNFL Under Fire on Both Continents

British Nuclear Fuels Limited (BNFL) is the company that DOE selected to build and operate the new Plutonium Incinerator at INEEL. Recent revelations about the company's operations in both Europe and the US have grown to international scandal proportions.

The most recent safety problems are revealed in Great Britain's Nuclear Installations Inspectorate General's Report on BNFL's operations that found the company falsified reactor fuel safety reports in 1996 related to shipments to Germany's Preussen Elektra nuclear power plant. The German government is reportedly demanding that the utility shutdown the reactor because it is using questionable plutonium-uranium oxide (MOX) fuel.

BNFL's reactor fuel manufacturing plant in Great Britain also came under fire last fall for falsifying records related to fuel shipped to Japanese nuclear power plants using the plutonium MOX fuel.

Ever since the scandal broke last September regarding BNFL's falsification of MOX fuel safety records at its Sellafield plant in Great Britain, the allegations regarding the extent and nature of the wrongdoing have grown. The British Nuclear Installations Inspectorate released two reports regarding both the falsification scandal and BNFL's overall supervision of operations and safety at the plant. These reports have revived the scandal and given new insight into BNFL's overall management and safety problems.

These issues are important to people living in the shadow of INEEL because of the new Plutonium Incinerator BNFL wants to build in Idaho. The possibility of having less than a reliable owner/operator of such a dangerous incinerator makes people justifiably concerned.

Regarding the BNFL falsification scandal itself, the British government report reveals that the actual scope of the problem was more widespread than previously thought. While BNFL admitted to falsification of records for a couple of shipments, it turned out that at least 22 shipments of MOX fuel were sent out with falsified safety records, and a startling four out of the five shifts of workers were involved. Nor is the problem recent, alleged falsification incidents date back as far as 1996 fuel shipments to the German reactor.

The general management and safety report is highly critical of the overall management of the BNFL facility at Sellafield. The report states that the company lacks the necessary "safety culture" for a nuclear facility, that improper management allowed the falsification to occur, and that a number of major changes in management structure and safety compliance are required to meet the Inspectorate's concerns. In the wake of these reports, BNFL chief executive John Taylor recently resigned

and Swedish environment Minister, Kjell Larsson stated that Sweden will not send spent nuclear fuel from a research reactor to Sellafield for reprocessing.

BNFL's US operations at DOE's Oak Ridge National Laboratory are also under fire. The companies' large scale radioactive metal recycling program rallied the US Steel Manufacturers Association to call for a stop to BNFL's production. Since BNFL's contaminated metal was going out into the open market, an international ban was anticipated on all US metals production. U.S. metals' producers are not going to allow their whole industry to be tainted over this ill-conceived recycle project.

It should be noted that the way this plan was originally sold to the American public by DOE was to generate waste container material for radioactive waste destined for geologic disposal. On the surface this sounded innocuous enough that it did not generate much public concern. Using contaminate metal for making radioactive waste containers is a reasonable use of materials.

What was unexpected in the BNFL privatization metal recycling project was the apparent profit motive that the contractor determined that there was more money to be made by selling the contaminated metal on the open market rather than just manufacturing waste containers.

The problems include allegations that 1.) BNFL's experience with radioactive metals recycling was misrepresented, 2.) BNFL failed to disclose the management and safety deficiencies of its recycling subsidiary, 3.) the final contract between DOE and BNFL failed to include agreed upon language allowing DOE to control the end use of the recycled waste.

The Environmental Defense Institute, Keep Yellowstone Nuclear Free, Sierra Club, Jackson Hole Conservation Alliance, and the Snake River Alliance are co-plaintiffs in a lawsuit against DOE over plans to build the Plutonium Incinerator at INEEL. BNFL's reported track record both in England and the US shows the company cannot be trusted. The \$1.2 billion Plutonium Incinerator called the Advanced Mixed Waste Treatment Project still needs two state permits before construction can begin. If the State grants the permits, the plaintiffs plan to challenge the decision in state court.

Gerry Spence, Jackson Hole, Wyoming attorney representing the environmental groups suing in federal court to stop the incinerator notes, "This is the company that we're going to trust our children with?" Spence is calling on Energy Secretary Bill Richardson to cancel the Department of Energy's contract with BNFL. "Why would we permit somebody who has now been exposed as somebody who lies and cheats to come in and take care of a plutonium incinerator that's never been tried before?" Spence said. "It's insane."

Endnotes

1. British Nuclear Fuels Ltd. Advanced Mixed Waste Treatment Plant Air Permit to Construct Application, January 12, 1999, to Idaho Division of Environmental Quality, page 33, Table 4-2.

2. A Comprehensive Inventory of Radiological and Non-radiological Contaminates in the Waste Buried in the Subsurface Disposal Area of the INEL RWMC During the Years 1952-1983, Volume 1, Idaho National Engineering Laboratory, EG&G Idaho, Inc., June 1994, page 6-25, herein after referred to as EGG-WM-10903.

3. EGG-WM-10903, page 2-76 and C-5 Table C-1.

4. EGG-WM-10903, page xxix, Table S-2.

5. Openness Press Conference Fact Sheets, February 6, 1996, page 65

6. Openness Press Conference Fact Sheets, February 6, 1996, U.S. Department of Energy, page 65.

7. Missing Flats plutonium in Idaho, Manager says. Boulder Camera February 22, 1996, Chris Roberts staff writer. "As much as 80 percent of the missing 1.2 tons of plutonium at the Rocky Flats plant may never be found, plant manager Mark Silverman said Wednesday." "The majority is in Idaho, buried in trenches" Silverman said. "We'll never know for sure unless we go back in and dig it up." "The material in Idaho was buried years ago, and new, more accurate measuring technology indicates there may be more buried at the Idaho National Energy Laboratory than records indicate. Most of Rocky Flats plutonium waste was shipped by rail to INEL before 1989 when the former nuclear weapons plant south of Boulder stopped production." Eighty percent of 1.2 tons (1,191 kg) equals 953 kg.

Also See:

"A Discussion of Inventory Difference, Its Origin and Effect," Compiled for the Nuclear Material Safeguards Department by N.J. Roberts, et al. EG&G, Rocky Flats Inc. Safeguards and Security Program Support, Revision 4 August 1994. This reports notes on page 9 the waste shipped to INEL was understated by 600 to 800 kg between 1953 and 1971. The remaining inventory difference of 200 to 300 kg was in process equipment holdup at page 10.

Also see:

Pakert/Giacomini Draft, Rev 1-12/6/93 "Questions and answers Possibly arising from the Inventory Difference at Rocky Flats" Department of Energy Rocky Flats Operations Office. This report notes at page 3 that not more than one-third of the inventory difference is in process holdup.

Also see: Moore, LeRoy, Fact Sheet on Forms of Plutonium at Rocky Flats, August 23, 1997.

Also see: Goldfield, Joe, INEEL Advanced Mixed Waste Treatment Plant, January 26, 2000, page 1.

8. EGG-WM-10903, page C-5

9. EGG-WM-10903, page 6-13