

DOE Launches New INL Mixed Hazardous and Radioactive Waste Treatment Plan

The Department of Energy (DOE) Idaho National Laboratory (INL) contractor CH2M-WG issued a public notice mailing (August 21, 2006) on a permit modification request ("Permit") that offered inadequate discussion on this project and no "on-line" access to the Permit documentation. Initial review of Idaho Department of Environmental Quality (IDEQ) website also did not show readily accessible documentation of the Permit. Only after directly contacting IDEQ was the information made available to EDI. The public must not have to "jump-through-these-hoops" to gain access to this crucial information.¹

The 60-day comment period (ending 10/20/06) is inadequate given the importance of this major new operation and the potential for significant environmental impact. Therefore, Environmental Defense Institute (EDI) requests that the comment period be extended to 90 days after IDEQ issues its review of the more than 460+ pages of the Permit. Hopefully, IDEQ will not again bury this Permit review in some obscure location on its website as it did previously.

EDI has always supported the safe conversion of high-level tank inventory into a waste form that would not pose a continued threat to the underlying Snake River Aquifer. EDI, however, protests DOE's attempt to circumvent applicable Resource Conservation Recovery Act (RCRA), Clean Air Act, and Clean Water Act regulations.

One of the crucial deficiencies of this Permit is that it only addresses hazardous materials and totally ignores radioactive materials released to the atmosphere. The Permit must address compliance with applicable regulations.² This is a crucial issue because during 2003, INTEC released 6,002 curies of radioactive emissions to the atmosphere.³ By any standards, this is an enormous amount of radiation to the environment! Since the new Integrated Waste Treatment Unit (IWTU) is part of the multi-process INTEC Liquid Waste Management System (ILWMS) that is treating the most radioactive waste on earth, this is an unacceptable exclusion. This Permit Modification Request belatedly includes the whole ILWMS component units that include:

- Integrated Waste Treatment Unit (IWTU)
- Evaporator Tank System (ETS) formerly called the High-level Liquid Waste Evaporator
- Process Equipment Waste Evaporator (PEWE)
- Liquid Effluent Treatment and Disposal (LET&D)

No one outside DOE will challenge the Department's creative moves to change the names of processes in a blatant attempt to obfuscate the legal definitions in the regulations. This Permit is no exception! Even the most pedestrian observer of this Permit will conclude that DOE's "bait and switch" is illegitimate and continues to compromise public health and safety.

Although the Integrated Waste Treatment Unit (IWTU) does not meet the legal definition of incinerator (open flame combustion) that DOE calls "Steam Reformer," it meets every other

¹ See IDEQ website for the DOE Permit Modification Request documentation:

http://www.deq.idaho.gov/waste/Permits_forms/Permitting/haz_waste/ilwms_Permit/overview.cfm

² 40 CFR 191.27 (notes 5 and 6) as well as 40 CFR 61 Subpart I.

³ Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems, DOE/EIS-0373D, page 3-26.

regulatory definition of a "combustion unit" or controlled pyroforic high-temperature burn (1,150 degree C), using induced fuel in the form of combustible carbon (coal) and oxygen as a means of maintaining the high temperature for reducing the waste in a fluidized bed to a granular calcine like waste product.

Regardless what DOE calls this new IWTU and other ILWMS operations they must be independently defined by a characterization of the treatment process implemented.

"A temperature of 1,150 C is the same as the operating temperature in the turbine (hot end, in the direct blast of the burning fuel/air mixture) of a jet engine. This is bright red heat, enough to melt copper & incinerate almost anything, but the mere idea of burning previously classified high level waste & not monitoring or controlling the resulting emissions seems to me to be beyond stupid & without regard to public safety," notes a University of Idaho Engineering Materials Science professor.

DOE's Permit claims the new IWTU will process "approximately 836,000 gallons of mixed liquid waste, containing both hazardous and radioactive components stored in three 300,000-gallon tanks." ⁴ These are only current inventories and do not include DOE plans to restart spent nuclear fuel reprocessing that will generate significant volumes of "newly-generated" high-level liquid waste. This is an enormous amount of extremely deadly waste to treat and the potential for significant emissions that could affect the public and the environment must be recognized.

DOE states: "The units that comprise the [INTEC Liquid Waste Management System] ILWMS are capable of handling high-level, transuranic, and low-level radioactive wastes. Activities of typical wastes range from <20 nCi/g to 50,000 nCi/g. The exposure rates associated with these process solutions routinely exceed 100 mrem/hr and can pose a potentially serious hazard to workers at the INL if appropriate protective measures such as time, distance and shielding are not applied." ⁵

DOE's reported intent to restart reprocessing of spent nuclear fuel (SNF) at INL lends credence to public concerns that the IWTU is not just dedicated to treating existing high-level waste tank inventories, but also facilitating managing "newly-generated-waste" from reprocessing of SNF. ⁶

1. DOE Permit Modification Request (Permit) Discussion of Process Vents

"Process Vent" is a broad regulatory category for a major source of hazardous air pollutants that must comply with more restrictive EPA emission regulations. DOE has been and continues to side-step compliance with these emission regulations with bogus assertions that their hazardous and radioactive waste treatment operations are not Process Vents. IDEQ is complicitous in this charade by allowing DOE's obfuscation of the law.

DOE claims: "The IWTU does not involve distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. As such, the IWTU stack does not meet the definition of a process vent in IDAPA 58.01.05.008 (40 CFR § 264.1031) and the requirements specified in 40 CFR 264 Subpart AA do not apply." ⁷

However, 40 CFR 264.1031 states: "Process vent means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or

⁴ PERMIT, Attachment 1, page 1-D-134

⁵ PERMIT, Attachment 2, Section C, pg. 2-6. (nCi/g = nano Curies per gram) (mrem/hr = millirem per hour)

⁶ PERMIT, Attachment 2, Section C, pg. 12

⁷ PERMIT, Attachment 2, Section C, page 2-52

hot well) associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

"Distillation operation means an operation, either batch or continuous, separating one or more feed stream(s) into two or more exit streams, each exit stream having component concentrations different from those in the feed stream(s). The separation is achieved by the redistribution of the components between the liquid and vapor phase as they approach equilibrium within the distillation unit.

"Fractionation operation means a distillation operation or method used to separate a mixture of several volatile components of different boiling points in successive stages, each stage removing from the mixture some proportion of one of the components.

"Distillate receiver means a container or tank used to receive and collect liquid material (condensed) from the overhead condenser of a distillation unit and from which the condensed liquid is pumped to larger storage tanks or other process units."

Clearly, the IWTU meets two or more of the above definitions of a "process vent" under 40 CFR 264.1031. DOE cannot credibly claim exemption of this crucial emission control regulation. Moreover, IDEQ must ensure that DOE is not allowed to use this unfounded exemption. Also see detailed discussion on the IWTU Permit below.

DOE's Permit includes other liquid waste treatment units and claims: "The [Process Equipment Waste Evaporator] PEWE and [Evaporator Tank System] ETS off-gas is processed through vessel off-gas systems in Buildings CPP-604 and CPP-659 respectively and then sent to the APS in Building 649, prior to discharge to the main stack. Therefore, the PEWE and ETS vents do not meet the definition of a process vent and IDAPA 58.01.05.008 [40 CFR § 264.1031] does not apply."⁸

Again, the PEWE and ETS meet one or more of the above definitions of a "process vent" under 40 CFR 264.1031. DOE cannot credibly claim exemption of this crucial emission control regulation. IDEQ must ensure that DOE is not allowed to use this unfounded exemption.

The above DOE Permit does not implement new: "EPA (2005) recommendations that organics and metal emissions be increased by factors of 2.8 and 1.45 respectively, to account for potential increases in emissions due to process upset conditions."⁹ Also, there is no apparent cumulative hazardous/radioactive emissions data for all the INTEC operations using the same Main Stack, other co-located stacks, and the new IWTU stack as required in the regulations. This is a crucial issue because during 2003, INTEC released 6,002 curies of radioactive emissions to the atmosphere.¹⁰ By any standards, this is an enormous amount of radiation to the environment!

2. INTEC Liquid Waste Management System (ILWMS) Permit Tank Issues

DOE plans to continue using RCRA non-compliant tanks and ancillary service lines and equipment. Twelve of these tanks (listed in the Permit) date back to 1951, and nine tanks date back to the 1970s and 1980s, long beyond their 20-year design life. An additional 18 tanks have no "certification stamp." That is a total of 39 tanks that are non-compliant. **The ASME design standards¹¹ for the other tanks are only relevant if the tanks have not already exceeded their design life. DOE must stipulate the ASME design life and age for each of the tanks listed in the Permit along with the anticipated years of future operational use.**

RCRA secondary containment requirement in tank vaults is compromised by DOE's use

⁸ PERMIT, Attachment 2, page 2-52

⁹ PERMIT, Attachment 1, page 1-D-138

¹⁰ Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems, DOE/EIS-0373D, page 3-26.

¹¹ American Society of Mechanical Engineers (ASME)

of "gerry-rigged" Hypalon liners with dubious joint sealants that are not compliant or certified for waste contained in tanks. Extensive use of old non-compliant "drip troughs" in ancillary service lines instead of the required welded stainless steel secondary containment with continuous monitoring, are grounds for denying the Permit under 40 CFR 270.42.¹²

ILWMS "Bottoms Tanks" do not meet required secondary containment under RCRA. DOE's Permit states: "The secondary containment is constructed of concrete floor lined with a Hypalon® membrane (registered trademark of DuPont), which extends three feet up the walls. ... All seams in the secondary containment are heat-welded or adhesive 14 bonded to avoid any cracks or gaps. The membrane is sealed around the tank saddles by silicone rubber 15 sealant that is capable of withstanding the expected waste solutions for extended periods of time."¹³

The above DOE disclosure of use of non-certified "silicone sealant" that is "capable of withstanding the expected waste" for some vague undocumented "extended period of time" is grounds for denial of the Permit under 40 CFR 270.42 because it does meet regulatory requirements for secondary containment.

Twelve of the CPP-641 listed tanks date back to the early 1950s, 45 years beyond their 20-year design life. Nine of the above tanks put into service in the 1960s and 1980s are also long beyond their design life. An additional four tanks have no certification stamp.

So a total of 26 tanks (just in CPP-641) are not in compliance. The ASME design standards for the other tanks are only relevant if the tanks have not exceeded their design life. DOE must provide documentation on each tanks design life and age to validate their continued use through the operational life of the ILWMS.

The Permit tank table states: "No code stamp required??" The code stamp is a RCRA requirement and is the only legitimate verification that the tank does in fact meet the standard. Again, these tanks are likely beyond their 20-year design life. Therefore, DOE must provide documentation on each tank design life.

Again, the ASME design standards for the tanks are only relevant if the tanks have not exceeded their design life and future operational planed use. DOE must provide documentation on each tanks design life to validate their continued use through the operational life of the ILWMS.

DOE's Permit acknowledges secondary containment in waste service piping: "Concrete-embedded transfer lines have been identified at the ILWMS."¹⁴ This is a violation of compliance with 40 CFR § 264.193(f) that requires monitored leak collection and welded stainless steel secondary containment. Although DOE claims its intent to upgrade or reroute these service lines, there is no apparent confirmation that all of these upgrades has occurred.

RCRA does not provide for the above DOE claimed exemptions. Therefore, the Permit is deficient. Extensive use of old non-compliant "drip troughs" in four other buildings' ancillary service lines instead of the required welded stainless steel secondary containment with continuous monitoring, are grounds for denying the Permit¹⁵

DOE's Permit states that; "No viable pathway exists for migration of hazardous waste or hazardous constituents from the waste treated in the PEWE, LET&D, ETS, or IWTU to the soil, ground water, and/or surface waters."¹⁶

DOE's above statement is not true because of the extensive soil and groundwater monitoring data under INTEC showing massive contaminate migration to the soil and

¹² USDOE Idaho Operations Office RCRA Permit Modification Request for Idaho National Laboratory, August 2006, herein after referred to as PERMIT. Attachment 1-D-Process pg. 99

¹³ PERMIT, Attachment 1, page 1-B-10

¹⁴ PERMIT, Attachment 1-D, page 1-D-87

¹⁵ PERMIT, Attachment 1-D-Process pg. 99

¹⁶ PERMIT, Attachment 1-D, page 1-D-104

groundwater. As these comments articulate the ILWMS process off-gas systems are inadequate, and DOE's attempt to exempt these process vents from regulatory compliance, is clear evidence that they would not meet critical scrutiny on compliance.

According to IDEQ, major portions of the Permit have been redacted (censored) as "proprietary information."¹⁷ This redaction/censorship of pertinent information is unacceptable in EDI's view because it shows the flow charts outlining the inter-connection of the various operations as well as other crucial information! IDEQ must force DOE to fully disclose all process information.

DOE acknowledges that; "The INTEC was designed and built using a variety of Architectural Engineers (AE) over the past 50 years. Those AE's used different line identifier, instrumentation identifiers, etc. As buildings were designed and constructed, the current architectural engineering standards for the time period were used. The diagrams of the processes submitted to the IDEQ span more than 50 years."¹⁸

What confidence can the public attribute to this grossly out-dated documentation and standards even if it were made public?

Finally, IDEQ must take a more critical review of this Permit than it has taken with previous INL Liquid Waste Management System RCRA Permits because of the extreme hazard this remote handled mixed transuranic waste treatment poses to the public.¹⁹ Moreover, there is no "path-forward" for the final waste form, so IDEQ must ensure that DOE develop a credible regulatory compliant interim storage for this waste until the final Permitted geologic repository is designated.

It is now up to the Idaho Department of Environmental Quality to review this DOE Permit Modification Request and issue its findings. In the past, IDEQ chose to put the politically expedient ruling of Idaho's single largest employer ahead of public health and safety. Public comment is crucial to reversing this miss-guided priority.

EDI's full comments on this DOE Permit Modification Request are available on our website: <http://environmental-defense-institute.org/publications>

What can you do?
Send your comments on DOE Treatment Plan To
Brian English,
Idaho Department of Environmental Quality
1410 N. Hilton, Boise, ID 8383706-1255
email: Brian.English@deq.idaho.gov

¹⁷ IDEQ email 9/6/06 to Broschious

¹⁸ PERMIT, Attachment 1, page 1-D-72

¹⁹ PERMIT, Attachment 2 Section C, page 17

Thyroiditis Linked to Fallout

Patrice St. German reports in the Utah Spectrum " A study conducted by several agencies and researchers, including University of Utah professor Joseph L. Lyon, indicates a much stronger association than previously believed between fallout from testing at the Nevada Test Site during the 1950s and thyroid conditions.

The conclusion to the study, which will be published in the Nov. 1 journal "Epidemiology," indicates that persons exposed to radioactive iodine as children have an increased risk of thyroid neoplasms and autoimmune thyroiditis up to 30 years after exposure.

What was surprising to Lyon was that benign neoplasms, a precursor for cancerous lesions, was elevated in this group, but unfortunately, he said, the government halted testing last year.

Thyroiditis strikes about 1 percent of the population, Lyon said. "There were about 10,000 people in Washington County in 1950, and you would expect hundreds," Lyon said. "The only problem we are looking at is the risk can occur over a lifetime, unlike leukemia where children died within 10 years of the testing. Here, it's still developing so it would be hard to say how many hundreds of people exposed would have been affected."

The report didn't come as a surprise to St. George resident and downwinder Michelle Thomas who participated in thyroid studies for decades.

"Many children (who are) now adults had thyroid nodules and thyroids removed and some have been on thyroid medicine for years," Thomas said. "For those of us who were part of the study, we didn't need to wait for any study to tell us something we already knew. We are living, breathing evidence."

Lyon said the recent study was a follow-up of one done in 1985 and 1986. However, after the last round of examinations the government halted the testing. "Basically, the government decided they didn't want to know any more information," Lyon said. "Our government is spending money in Russia to follow kids after Chernobyl, yet they are not interested in finding anything out about their own citizens."

Lyon said one group in the United States received the same exposure as Chernobyl. There were 3,500 people in his test group. Lyon said he needed another three to four years of testing because there may be other risks that have not yet been anticipated. Thyroiditis, Lyon said, is treatable. Those diagnosed are prescribed a daily medication that they need to take for the rest of their lives. Although some people develop an enlarged thyroid, Lyon said other symptoms include fatigue. The presence of neoplasm, although non-cancerous, placed persons at a much higher risk of developing cancer. "Stopping the funding (for testing) doesn't make sense, especially since we are funding studies in Russia," Lyon said. "In terms of the United States, there is no political interest in knowing and it was virtually the same exposure."

Matheson Acts on Fallout Study

Joe Bauman reports in the Deseret Morning News 10/13/06 *Lawmaker calls for 'roadblocks in way of any new testing'*; "The more scientists look into the effects of fallout from nuclear weapons tests, the more damage they discover, says Rep. Jim Matheson.

The Utah Democrat was responding to a study by the University of Utah researcher Dr. Joseph Lyon and colleagues, which was reported in Wednesday's edition of the Deseret Morning News. A re-evaluation study by 15 experts headed by Lyon, to be published in the journal *Epidemiology* on Nov. 1, shows that more than twice as many downwind residents as originally believed suffered damage to the thyroid gland from fallout.

"Dr. Joseph Lyon and his associates have spent 40 years researching danger to those who were 'downwind' of nuclear testing in Nevada," Matheson said in a press release. "The more we look, the more damage we uncover from this era, even as the federal government was telling us it was safe."

Lyon's early studies helped convince Matheson's late father, the former Utah Gov. Scott M. Matheson, that he should demand the release of classified data about the nuclear tests, says the release. "Gov. Matheson died from a radiation exposure-related illness at age 61," it adds.

The congressman is quoted as saying the data prove that even underground nuclear tests are unsafe. "I have long opposed any effort to resume nuclear weapons testing in Nevada," he added. "My legislation — Safety for Americans from Nuclear Weapons Testing — establishes significant roadblocks in the way of any new testing."

The legislation requires Congress to authorize any nuclear weapons test and establishes the National Center for the Study of Radiation and Human Health, he said. The center is a consortium of universities that will study health effects of radiation exposure and illnesses that are linked to radiation.

Lyon's study is called "Thyroid Disease Associated With Exposure to the Nevada Nuclear Weapons Test Site Radiation: A Re-evaluation Based on Corrected Dosimetry and Examination Data."

The journal "Epidemiology" placed an abstract online. To read it, go to the scientific journal's main Web site, www.epidem.com/pt/re/epidemiology/paploc.htm and then click on the box labeled "Epi Fast-Track."

**November 7 is Election Day
The Most Important Election in Decades
Because We Face a Constitutional Crisis
If for Any Reason You Can't Get to Your Polling Place
Contact Your Local County Registrar's Office and Ask for an
Absentee Ballot**