

**INEEL NEWS**  
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**Federal Court Rules in Favor of Idaho  
to Require DOE Remove ALL Buried Transuranic Waste at INEEL**

Federal Court Justice Edward Lodge issued a ruling on March 31, 2003 that found in favor of the State of Idaho's contention that a 1995 Settlement Agreement/Consent Order stipulates the removal of all buried transuranic waste from INEEL. This ruling ends a long-standing legal battle between the State and the Department of Energy over what waste was included in the Agreement. Judge Lodge's ruling states:

"The express language of the [Settlement] agreement, when taken as a whole, expressly requires that all transuranic waste be removed from INEEL. The parties specifically define transuranic waste without any limitation as to its location within INEEL nor any limitation to amount. Thus the Court is able to unequivocally state that in viewing the document in the light most favorable to the United States, the plain language of Paragraph B.1 [of the Settlement Agreement] clearly represents the parties intent at the time the agreement was drafted that the United States remove all transuranic waste located at INEEL."

This is great news for Idahoans because the Idaho National Engineering and Environmental Laboratory (INEEL) mismanagement of this most deadly of radioactive and chemical waste poses the most significant threat to the Snake River Plain Aquifer. INEEL buried waste is, and has been for decades contaminating the aquifer upon which much of Idaho relies upon as a sole source of drinking water.

Judge Lodge's ruling will now force the Department of Energy to remove the ongoing threat that could compromise Idaho's future and the health and safety of the more than 200,000 Idahoans that rely on the Snake River Aquifer for drinking water.

The Environmental Defense Institute (EDI)

filed an Amicus Brief (friend of the court) basically in favor of the State of Idaho's position. EDI's position however emphasized that **all** INEEL buried transuranic, high-level, alpha and greater than Class C low-level highly radioactive waste must be exhumed and sent to a safe permitted geologic repository outside of Idaho as currently required by law. Both the State and DOE strenuously objected to EDI's Amicus Brief which documented that there were more than 90 metric tons of irradiated reactor fuel in addition to between one and three tons of plutonium waste from DOE's Rocky Flats Colorado bomb plant buried at the INEEL dump. Tragically, the state failed to ask the federal Court to ensure the specific inclusion of buried high-level waste in addition to transuranic waste in the court decision. Presumably the state does not want anyone else to know that this INEEL nuclear waste dumping happened on their watch.

Irradiated reactor fuel is by legal definition high-level waste that has always been illegal to dump in shallow burial such as the INEEL Radioactive Waste Management Complex which is a series of crude unlined pits and trenches. This burial ground would not even meet current municipal garbage landfill regulations, yet it is still receiving radioactive waste today. In light of DOE's decades of foot dragging, and unwillingness to own up to its legal and public commitments, it remains uncertain what action will result to remove this public hazard.

For a more detailed discussion on this issue, see EDI's Amicus Brief on our website publications link: <http://personalpages.tds.net/~edinst>

## INEEL Pollution Subjects Snake River Aquifer to Significant Risk

The preponderance of data currently available to the Environmental Defense Institute at the time of this writing clearly indicate that there is a major public health and safety hazard looming related to the migration of Department of Energy (DOE) Idaho National Engineering and Environmental Laboratory (INEEL) waste discharges. This pollution is currently contaminating the Snake River Plain Aquifer that eventually will (if not already) threaten all downstream users of this sole source aquifer. Immediate action is needed by federal and state regulators, in addition to public pressure, to ensure that all tank waste, buried radioactive and hazardous chemical wastes are exhumed (into safe interim storage), and that continued dumping of INEEL liquid process waste into unlined percolation ponds is terminated because it facilitates the flushing of pollution into the aquifer. Time is of the essence, since every day that goes by, more of this deadly pollution migrates beyond any means of mitigation.

In 1991 the Environmental Protection Agency (EPA) ruled that the Snake River Plain Aquifer is a "sole source aquifer." Under the Safe Drinking Water Act, EPA can determine that an area has an aquifer that is the sole or principal drinking water source for the area and if contamination would create a significant hazard to public health. The Snake River Aquifer is the sole water source for nearly one fourth of Idahoans (<200,000 residents), second only in size/volume to the Ogallala Aquifer in northern Texas and southern Oklahoma. The Snake River Aquifer flows to the south and southwest (starting near Island Park Reservoir on the east and Bliss on the west) and covers an area of 9,611 square miles. Water storage in the aquifer is estimated at two billion acre-feet, and a drainage area of 35,000 square miles.

The Snake River Aquifer via spring discharges (ranging from Bliss, Idaho on the west to American Falls Reservoir near Pocatello, Idaho on the east) provides in the summer months the entire flow (due to upstream irrigation) of the Snake River. Thus the aquifer supplies (in the summer months) all the communities downstream that rely on the river as their

primary water source.

The hazard of INEEL contamination extends to most of Idaho via the Snake River. Arguably, since the Snake River is a tributary to the Columbia River, the INEEL contamination impact zone extends to northern Oregon and southern Washington states. A State of Oregon report found that after the DOE Hanford nuclear reactors in Washington State were shut down and ended direct discharges to the Columbia River, the highest radioactive pollutant contributor to the Columbia was the Snake River.

The State of Idaho now finally, but quietly in Federal Court briefs, acknowledges that: "Over the years approximately twenty (20) thousand gallons of high-level radioactive waste have leaked into soil and groundwater at INEEL. DOE's own earlier internal reports note:

"Radioactive, inorganic, and organic wastes released from active and inactive waste sites have resulted in contamination of the Snake River Aquifer. Some of the injection wells, such as at Test Reactor Area, Power Burst Facility, Test Area North, and ICPP, disposed of the wastes directly into the Snake River Aquifer. Significant spills and leaks have frequently occurred over INEEL's history. Most spills have been the result of line and tank failures, leaking valves, and equipment and tank overfilling. [Spill and/or leak] volumes range up to 45,000 gal. It should be noted that rather large quantities of chemicals were routinely disposed of via the ICPP disposal well."

These waste discharges are the most deadly material in the world. Direct contact for only a few minutes of this high-level waste would result in death from the radiation exposure. To offer a perspective, EPA knows this material is so deadly that its emission regulations are in units of pico curies or one trillionth of one curie. Over 10 million gallons containing more than 50 million curies of high-level waste have already been "processed" in unpermitted unregulated INEEL waste operations. Due to DOE's non-compliant waste processing plants, in operation today, much of the radioactive pollution is simply exhausted out the stack

unimpeded by state and federal regulators.

Because of flooding of the INEEL radioactive waste dump, another eleven billion gallons previously injected directly into the aquifer, along with an additional current discharge of ~2 million gallons **every day** to unlined percolation ponds, these liquid radioactive waste disposal sites pose a significant hazard due to contaminants being flushed through the soil column to the aquifer. US Geological Survey (USGS) reports show the hydro-geologic vulnerability of the INEEL buried waste sites. Flooding incidents have already occurred in 1952, 1962, 1969, and 1982, and these sites are within the Big Lost River 100-year flood plain. This is where DOE plans to permanently leave buried waste and dispose of high-level and transuranic non-liquid waste currently in tank sediments."

The Natural Resources Defense Council (NRDC), together with two northwest Native American Tribes, filed a lawsuit challenging this DOE high-level waste disposal policy.

The INEEL radioactive waste dump is located in a regional depression about 40 feet **lower** than the Big Lost River that flows immediately north of the dump. Buried or otherwise dumped radioactive high-level and transuranic waste is currently contaminating the Snake River Plain Aquifer. The State of Idaho reported plutonium in the aquifer under the INEEL dump at 66 pCi/L or 4.4 times above the drinking water standard of 15 pCi/L. Depending on the species of plutonium, its toxic half-life can be as long as 24,000 years.

US Geologic Survey (USGS) conducted a study of the INEEL RWMC burial ground plutonium propensity to migrate and found that plutonium "is soluble in the water from the perched aquifer, and in time could be leached from the waste. Once dissolved, it could persist in solution and ultimately reach the Snake River Plain aquifer. Nevertheless, to conclude that the plutonium in the waste would not leach into the ground water over a period of time is **not** warranted. In addition, americium, although relatively insoluble and not subject to oxidation-state changes, could ultimately be leached from the waste to small but **radiologically significant extent.**"

[emphasis added]

More recent USGS reports show plutonium-239/239/240, americium-241, and cesium-137 in

aquifer wells some twenty miles southwest of the INEEL boundary. Although these off-site plutonium concentrations (0.013 pCi/L) are well below the EPA safe drinking water standard, independent scientists argue the standard is not protective of human health. Arjun Makhijani, Ph.D., a nationally recognized independent analyst of DOE's operations, noted that, the Safe Drinking Water standard of 15 picocuries per liter for alpha emitting transuranics like plutonium-238, plutonium-239, or americium-241 allows doses on the order of a hundred times higher than the 4 millirem annual limit specified for most beta emitters. A concentration of plutonium of only about 0.08 picocuries per liter in drinking water is required to produce a dose of 4 millirem per year to the bone surface (the crucial organ for plutonium). None of these limits takes into account the potentially more serious problems arising from fetal [unborn baby] exposure.

Idaho has recently discontinued monitoring for plutonium and americium at **off-site** wells for no reported reason. Also the State acknowledges that chromium (a known carcinogen) "exceeded the drinking water [standard] MCL of 100 ug/l" by 161%.

USGS samples taken in 1991 at INTEC found radioactive Iodine-129 near INTEC (3.82 times) above the drinking water standard. A 1993 USGS report found Iodine-129 from INEEL INTEC's 3.4 square mile ground water plume, in two wells eight miles south of the INEEL boundary near Big Southern Butte. Earlier USGS studies show aquifer Iodine-129 concentrations at 41 pCi/L. Iodine-129, a byproduct of the fission of uranium is of concern because of its 15.7 million-year half-life, and its known ability (like iodine-131) to lodge in the thyroid causing cancer. Because of this it is considered by EPA to be a permanent environmental pollutant and the drinking water standard for I-129 is set by EPA at **one** (1) pCi/l.

Radioactive tritium from INEEL dumping reported by DOE in 1992 at 3,940,000 pCi/L has migrated the 50 miles via the aquifer to the Snake River. USGS 1994-99 spring discharges to the Snake River sampling data show significant tritium concentrations of 65 pCi/L in the Twin Falls and Hagerman areas. The highest tritium concentrations were found in the eastern aquifer discharges to the Snake River at Devils Washbowl near Kimberly, ID.

USGS reports also show groundwater flow, or "conductivity" in the Snake River Plain Aquifer can reach 32,000 feet per day, or 6.06 miles per day. Contaminates discharged at INEEL have the potential to move rapidly through the aquifer to public water sources and to the Snake River. This rapid flow is attributed to the basalt lava flows underlying INEEL that have gaps called "lava tubes" that can "conduct" large amounts of water.

A 2001 USGS report analyzed the relative "age" of different water strata within the Snake River Aquifer using sophisticated analytic tools that measure dissolved elements to determine how recently the water was on the surface. The study found that 20-50% of the aquifer water is between 14 and 21 years "old" (length of time since it was last on the surface before becoming subsurface aquifer recharge). The study also found chlorofluorocarbon gases about 20 kilometers south of the INEEL boundary. This indicates a relatively rapid "turnover" of groundwater in the aquifer. The ramification being that radioactive and chemical contaminants in the aquifer are also likely moving as rapidly with the water through the aquifer. These findings are consistent with previously discussed sampling of aquifer spring discharges into the Snake River containing radioactive tritium that has a half-life of about seven years. These USGS research findings moreover contrast dramatically with DOE's public claims that contaminants discharged at INEEL will take hundreds or thousands of years to reach the Snake River via the aquifer.

INEEL, over its operating history, has received significant quantities of spent reactor fuel from dozens of sources and recent minimal (non-compliant) cleanup costs run between as 21 and 44.3 billion dollars. Basically, this far exceeds the cumulative costs of all public works (including dams) in the history of the State of Idaho. And who will pay? Not the DOE contractors who, thanks to DOE, mostly have loopholes so they pay **no** taxes. The American taxpayer is left with the bill. Even regulatory violation penalties on INEEL operators are passed on by DOE contractors as expenses for doing business at INEEL and are thus also paid by the taxpayer!

This article is based on a detailed (and heavily referenced) EDI report "Aquifer at Risk" that is available on our website publications section; <http://personalpages.tds.net/~edinst>

## INEEL Test Area North Proposed Cleanup Plan

The Department of Energy's (DOE) revised cleanup plan for Test Area North (TAN) launched in April 2003 contains major discrepancies. This new plan widely circulated to the public contains waste characterization data that bears little or no resemblance to DOE's own 1997 Comprehensive Remedial Investigation / Feasibility Investigation Report data and other internal INEEL waste characterization report data on TAN. These data discrepancies are in the range of many orders-of-magnitude.

Fundamentally, any waste treatment plan and applied technology for remediation must be based on reliable waste stream data. Otherwise, DOE will face another fiasco that occurred at the INEEL Pit-9 waste treatment program that was eventually terminated because of (among other reasons) inadequate waste characterization. An issue stressed previously by the Environmental Defense Institute in formal comments, and apparently ignored by DOE and the regulators, is that **both** the TAN V-Tank liquid and the sludge (tank heels) must be include in the calculus of determining an appropriate remediation treatment technology and the selection of waste disposal sites.

Additionally, the 2003 Plan fails to address all the tanks and other "buried" TAN waste issues. Only four of the V-Tanks are addressed (30,400 gal.) when there are at least six V-Tanks (additional 100,000 gal.) and other TAN waste discharge sites with major radioactive and hazardous waste contaminants.

These crucial issues add to the public's skepticism about DOE's veracity to tell the truth about its radioactive and hazardous waste crisis, in addition to the regulators willingness to adequately enforce the law that if appropriately applied, would appear to prohibit disposal of this waste on the INEEL site as DOE plans.

Therefore, the Idaho Department of Environmental Quality (IDEQ) and the Environmental Protection Agency (EPA) as regulators (in keeping with the Settlement Agreement stipulation that "alpha emitting mixed low-level waste" be shipped to a geologic repository out of Idaho), must not allow this remediation program to proceed until DOE provides credible justification for the radically reduced waste stream characterization data, and the regulators offer credible analysis that the waste treatment and disposal will comply with all court rulings and environmental regulations. Moreover, the public must then be fully

appraised via a new revised Plan, so that informed decisions can be made concerning the remediation alternatives available.

### TAN V-Tank Contaminates of Concern

Due to the long half-life of the radionuclides and the no-half-life of hazardous chemicals of concern at TAN, there is no credible reason that in the intervening few years there has been any reduction in the waste due to "decay."

The 2003 TAN plan contains data that is radically (orders of magnitude) inconsistent with earlier data. Neither DOE nor the regulators offer any evidence justifying these crucial data discrepancies.

The 2003 Plan notes the maximum concentration for V-Tanks 1,2,3, and 9, are compared to DOE's 1998 data on the same tanks for a few select contaminants in the table below.

Since DOE plans to dump V-Tank highly contaminated soils into the tank to absorb the liquid portion of the tank contents, this will add to the total tank contaminate levels. Addition of soil to dilute the concentration of the waste is expressly prohibited in hazardous waste laws ( RCRA 40 CFR 268.3).

The 2003 Plan acknowledges transuranic waste in the V-Tanks at 26.4 nCi/g (page 6) which is 2 ½ times higher than the greater than 10 nCi/g (Alpha Low-level) waste acceptance restriction for the new INEEL dump (ICDF) where DOE wants to dispose of this waste. DOE's 1997 show transuranic waste at 42.8 nCi/g, or over four times the dumping restrictions.

As previously discussed, Alpha Low-level waste containing transuranics also, according to the Settlement Agreement, must be shipped out of Idaho.

Additionally, a credible argument can be made that **both** the tank liquid and the sludge must be combined to determine if the waste elevates to the category of transuranic waste or alpha Low-level. The regulatory definition of transuranic radioactive waste is 100 nano curies per gram (nCi/g) of elements with an atomic number greater than 92 (i.e. above uranium) that also have a half-life greater than 20 years.

The table below shows major discrepancies in the sampling data and also suggests that this waste is at the very least "alpha low-level" or possibly "transuranic waste" (assuming inclusion of both liquid and sludge (tank heels) and therefore, cannot be disposed of at

INEEL as DOE plans at the ICDF.

Additionally, the 2003 TAN Plan fails to address **all the V tanks** and other "buried" TAN waste issues. Only four of the V-Tanks (1,2,3 &9) are addressed in the 2003 Plan when there are at least six V-Tanks with major radioactive and hazardous waste contaminants. V-Tanks 1,2,3,9,13,and 14 volumes are 130,400 gallons.

Unfortunately, the TAN plan still fails to provide remedial solutions that meet Applicable or Relevant and Appropriate Requirements (ARAR). Transuranic (TRU) or Alpha and Greater than Class C LLW (as defined by regulation) can not be dumped at the INEEL CERCLA Disposal Facility (ICDF) under current waste acceptance criteria (WAC) restrictions or Nuclear Regulatory Commission regulations on radioactive waste dumps because they must go to a geologic repository. The ICDF itself is questionably in compliance with current regulations. The Plans offers no substantive information about discrepancy of the maximum contamination levels related to individual Operational Units (OU).

The **real** reason the ICDF is being constructed where it is, results from a loophole in CERCLA that will enable DOE to dump just about anything from the INTEC because it is "on-site" disposal, whereas TAN waste is technically (off-site waste) so must meet ICDF waste acceptance criteria.

Consequently, the general public is effectively denied essential information upon which to make their own determination of whether the preferred alternatives were appropriate.

One of the fundamental problems with the new ICDF dump is its location within the floodplain of the Big Lost River that flows to the immediate north of the dump. Moreover, as a landfill, the bottom of the ICDF will be about forty feet below the river. DOE could have located this dump elsewhere that was not in the floodplain and over the Snake River Aquifer, but chose for economic and political reasons to ignore public challenges to the siting decision. The State of Idaho and EPA characteristically rubber stamped the decision.

Well documented evidence of contamination from INEEL waste migrating into the aquifer has fallen on deaf ears with the policy makers.

This article is based on the detailed and heavily referenced EDI report "Comments on Revised Proposed Plan for Test Area North" available on EDI's website publications section: <http://personalpages.tds.net/~edinst>

Table A

Maximum Individual Tank Contaminate	EPA Standard #	DOE Data 1998 Liquid	DOE Data 1998 Sludge	DOE Data 2003
Antimony	0.006 mg/kg	-	308 mg/kg	11.5 mg/kg
Arsenic	0.01 mg/kg	-	12.4 mg/kg	3.45 mg/kg
Barium	2.0 mg/kg	2,320 mg/kg	600 mg/kg	299 mg/kg
Cadmium	0.005 mg/kg	330 mg/kg	71.7 mg/kg	22.7 mg/kg
Chromium	0.1 mg/kg	286 mg/kg	3,770 mg/kg	1,880 mg/kg
Lead	250 mg/kg	81.7 mg/kg	3,190 mg/kg	454 mg/kg
Cesium-137	200 pCi/L	12,500,000 pCi/L	6,370,000 pCi/g 6,370 nCi/g	4,480 nCi/g
Strontium	8 pCi/L	250,000,000 pCi/L	7,070,000 pCi/g 7,070 nCi/g	5,180 nCi/g
Total transuranics V-Tanks 1,2,3,&9 including plutonium, americium, curium and neptunium	15 pCi/L (for drinking water);  100 nCi/g (for TRU disposal)	274,514 pCi/L	42,716 pCi/g 42.831 nCi/g	26.4 nCi/g

**Notes for Above Table A**

# The above EPA Maximum Contaminate Level (MCL) Drinking Waste Standards are offered here only to provide perspective on how hazardous the TAN wastes are. See 40 CFR 141.61, 141.62, 141.66.

V-Tank 13	Total Activity Curies	41,380,000,000,000 pico curies 41.38 curies
V-Tank 14	Total Activity Curies	25,900,000,000 pico curies 25.96 curies
V-Tank Soils		54,120 pCi/g 54.12 nCi/g

## Bush Administration to Restart Nuclear Bomb Testing

After over a decade of cessation of nuclear weapons tests, the Bush Administration now plans and has budgeted for a resumption of the tests at the Nevada Test Site.

In a 4/30/03 article in the Guardian/UK (ignored by US media) Julian Borger notes that US Senator Edward Kennedy warned that the Bush administration was preparing to restart the testing of nuclear weapons so it could develop a new generation of bunker-busting bombs and tactical "mini-nukes", potentially triggering a new arms race.

The veteran Democrat from Massachusetts was speaking before a congressional debate on an administration proposal to lift the legal restrictions on research into "mini-nukes" with an explosive force of less than five kilotons. The proposal is the latest in a series of steps taken by the White House to reduce the hurdles to producing the new nuclear weapons it says may be necessary to confront threats from "rogue states" or terrorist groups.

Mr. Kennedy said that the Congress and the American public had not fully realized the scale of the changes under way in US nuclear policy. "They have been eclipsed for too long by the war on terrorism and the war against Iraq. We can ignore them no longer." The administration has repeatedly said it has no current plans to resume nuclear testing, after an 11-year moratorium, but Mr Kennedy said the details of the defense budget suggested that such plans were quietly under way.

"The best way to get the indication of the seriousness of the administration is to follow the request of the money in the defense authorization," he said. "We budgeted \$700m for fiscal year 2004 [for special projects related to the nuclear arsenal], including funds that could be used to prepare for new tests and cut in half the time needed to conduct them."

In the next few days, congressional committees will debate a proposal by the departments of defense and energy to repeal a 1994 ban on the research and development on low-yield nuclear bombs.

Justifying the repeal, the Pentagon said it was necessary to "train the next generation of nuclear weapons scientists and engineers and restore a nuclear weapons enterprise able to respond rapidly and

decisively to changes in the international security environment, or unforeseen technical problems in the stockpile."

Under the Pentagon's classified nuclear posture review, late last year, nuclear weapons could be used against rogue states such as North Korea, Iran, Syria and Libya, and to pre-empt an attack with chemical and biological weapons.

The defense department is also planning a conference at the strategic command headquarters in Nebraska to rewrite nuclear policy. On the agenda are a new generation of weapons, including mini-nukes and a "robust nuclear earth penetrator" that will burrow into the earth before detonating, destroying command bunkers and arsenals.

Advocates of the "bunker-busters" argue that the fallout would be contained in the underground cavern hollowed out by the blast. But Matthew McKinzie, a scientist at the Natural Resources Defense Council, said yesterday that calculations based on the Pentagon's own computer modeling suggested that a 0.5 kiloton nuclear warhead would have to burrow 55 meters to eliminate atmospheric fallout.

Scientists claim there is no known material hard enough to punch more than 16 meters into the earth.

Sidney Drell, a nuclear control campaigner and former Stanford University physics professor, said a nuclear warhead which only burrowed 16 meters down would throw a million cubic feet of radioactive dust into the atmosphere.

According to a National Cancer Institute (NCI) Study, Idaho received the highest radioactive Iodine-131 fallout from previous nuclear bomb tests at the Nevada Test Site.

For more information on the NCI study, see INEEL News January 1999 on EDI's website.

<http://personalpages.tds.net/~edinst>

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