

**Public Comment Submittal on the Department of Environmental Quality Notice of Intent to Approve a Draft Hazardous Waste Treatment, Storage, and Disposal Permit Modification for INTEC Liquid Waste Management System Partial Permit at the Idaho National Laboratory (EPA ID No. ID4890008952) (Docket No. 10HW-2102) Issued September 28, 2021 (Which addresses changes to the Integrated Waste Treatment Unit (IWTU))**

**Comment Submittal by Tami Thatcher, December 20, 2021**

The public notice from the Idaho Department of Environmental Quality states: “The proposed Class 3 permit modification request addresses the replacement of the sintered metal filter elements in the Process Gas Filter (PGF) with ceramic filter elements, modifications to the wet and dry radiological decontamination systems, addition of 36 new thermocouples to the shell of the Carbon Reduction Reformer (CRR) and several other changes. The ILWMS Partial Permit is being modified to include design, operation and inspection changes to the IWTU.”

The actual changes include many changes to various waste tanks in the facility and includes new tanks and new but vague discussion of where decontamination waste will go. For example, in the 130 megabyte document of over 2000 pages, there are the changes to include new Condensate Collection Tank and a new Decontamination Collection Tank. And it is briefly mentioned that decontamination waste may be returned to the “NWCF for interim storage.” What this actually means is unclear since the Department of Energy usually means “forever” when it states “interim storage.” Does the decontamination waste pose additional treatment problems? Does it increase the number of storage canisters for the treated waste?

The redesign of the Process Gas Filters has been in turmoil, apparently landing on the decision that safety fuses cannot be removed entirely but cannot be made to function as intended. The intended function of the safety fuses was to reduce the likelihood that radioactive material mixed with solids would not downstream to processes not intended to receive this material. Such acceptance of the increased likelihood of unintended flow of what is called “product” or “solids carryover” and I will call “radioactive sticky sand” will gum up piping and may cause HEPA filter failure. Such flow of the radioactive sand and plant gum-ups will require more plant shutdowns with accompanying chemical decontamination.

This situation puts radioactive material into plant areas that affect worker safety and worker radiological exposure. It places more reliance on ad hoc operator decisions and on non-safety-related radiological monitoring equipment which has been known to fail during upset conditions. The failed attempts to redesign the safety fuses such that plant gum-ups are prevented increases the likelihood of operational problems and accidents.

And importantly, it appears that the increased frequency of forced shutdowns due to gumming up the plant will create waste streams that the permit has not addressed how these new waste streams will be treated.

And if the plant shutdowns are frequent enough, the generation of new waste or additional waste may be so high, that the facility never catches up on treating the waste, if the plant manages to operate and without significant accidents.

The Department of Energy has acknowledged that its previous estimate of the treated waste storage canisters was inadequate and that its current storage accommodations for the treated sodium-bearing waste are inadequate. But no information on why the initial estimates were wrong has been provided. And no information on how the current increased estimates were derived have been provided.

Because the requested permit modification is ambiguous about how the decontamination solution waste will be treated or when, the public must be provided with more information. And the Idaho DEQ should require explicit information about any difficulties the added decontamination waste streams may create and how it will be stored and treated.

The Idaho DEQ must not assume that *startup* of radiological operations of the Integrated Waste Treatment Unit (IWTU) indicates that the waste will be treated in a timely manner or at all.

The Idaho DEQ should require that the Department of Energy replace the existing tanks for the sodium-bearing waste soon, perhaps within 7 years, if the total waste volume has not been significantly reduced within 3 years from now.

I have recently requested from the Idaho DEQ a public hearing on this matter, but I have not received notice of a public meeting being planned or of extension of the public comment due date.

Also, there has been no indication that the radiological emissions from the IWTU will be adequately characterized or monitored by the Department of Energy. And so far, the Idaho DEQ's Idaho National Laboratory Oversight Program appears more determined to provide cover for the Department of Energy's ongoing radiological contamination than to provide actual radiological monitoring with accurate explanation of the results. Failing to highlight elevated levels of radiological detections, failure to explain the detection capability attained with stated radioactivity was not detected, and extended monitoring outages are certainly unacceptable.

Questions about the permit are summarized as follows:

1. The acceptance of frequent gumming up of the IWTU with what I will call “radioactive sticky sand” seems not only to degrade safety at the facility, it will create volumes of rinse-out waste. Is there a point at which the facility makes as much waste as it treats?
2. Are the IWTU gum-ups with radioactive sticky sand likely to compromise the HEPA system?
3. Why has the number of canisters of treated sodium-bearing waste increased so much?
4. We have often been told that the sodium-bearing waste is the 900,000 gallons of radioactive liquid waste. How many gallons of “newly generated waste” (NGW) are going to be added and what radionuclides and curie amounts of each radionuclide are being added? (Low curie amounts of certain radionuclides have higher health impacts than other radionuclides, rendering a total curie number rather uninformative.)
5. Is the proportion of “newly generated waste,” (NGW), which is radioactive liquid waste of unstated origin growing? What is the Department of Energy going to do with additional NGW when IWTU is finished operating?
6. The waste created from flushing out the IWTU system is not discussed for its entire life. Where does this waste go, where is it stored, for how long, and does it create additional operational problems? Could this waste be flushed to open-air ponds or storm injection wells?
7. The stated design life of components comprising the IWTU was a scant few years. Now the number of years expected for the operations to continue are far longer than the envisioned 1-2 years of operation. Is IWTU already past its design life? How is the inadequate (short) design life of IWTU going to be addressed?
8. Is there inappropriate pressure on the new cleanup contractor to accept an unsafe design, in order to resume fuel research or related to the fines being paid by DOE?
9. Should the existing sodium-bearing tanks be replaced before more years go by for the waste to be treated?
10. Will the sodium-bearing tanks be compromised if the Mackay dam fails? Will the treated sodium-bearing canisters be compromised if the Mackay dam fails? (Tank piping failure due to tank floating, tank corrosion issues, canister corrosion issues, etc.)
11. The treated sodium-bearing waste has had no disposal path for 3 decades now, despite the hope that WIPP would accept this waste. Is this highly soluble waste form suitable for any storage or disposal concept?
12. What evidence is there of adequate emergency planning for an upset at the IWTU? Fire and radiological emergencies at the INL continue a track record of inadequate response with deficiencies in emergency planning, which is required to be addressed by RCRA.

There has been no way to have any of my questions answered, unfortunately. The proposed modifications appear to reduce the safety of the facility. Many basic issues about the treatment of the rinseout waste and the continually added “Newly Generated Waste” remain unexplained. Documentation pertaining to expected radiological releases from the IWTU during normal and off-normal or accident conditions remain unavailable to the public. The public cannot be assured of adequate monitoring of radiological emissions by either the Department of Energy or the

Idaho Department of Environmental Quality's INL Oversight Program. A recent reduction in the monitored levels of plutonium-239 in ambient air filter, by a factor of 10, in the Idaho DEQ's monitoring program have simply been verbally explained as being due to sending the samples to a different analytical laboratory. The ramp up in Idaho National Laboratory radiological airborne effluents and corresponding radiological doses is continuing and even radionuclides that can only be from the INL are not being attributed to the ongoing INL releases. Many of the radionuclides are long-lived and will remain in the environment. Yet, resuspension of already released radionuclides are ignored in the annual dose calculations. And many years of dose calculations have understated the INL airborne effluents, thereby underestimating the radiation dose. For example, the liquid waste sent to evaporation ponds were not included as airborne effluents from 1993 through 2000, even though the ponds were now lined evaporation ponds.

The extremely low, less than 1 millirem per year effective whole-body doses, estimated for annual INL airborne radiological releases are keyed only to the biological endpoint of expected fatal cancer. Yet these seemingly small doses are far above the thyroid dose from natural background. And what the INL's ongoing airborne radiological releases have caused is the doubling of the incidence of thyroid cancer in all of the counties surrounding the INL, compared to the rest of Idaho and U.S. Birth defects and infant mortality are also underrepresented by the effective whole-body doses from various radionuclides internally incorporated into the body. Other detrimental health effects include heart disease and impaired immune system function. The Idaho Department of Environmental Quality is not serving the citizens of Idaho well as it continues to pander to the Department of Energy and aid the DOE's unfettered polluting of southeast Idaho with airborne radionuclides.