

# **Public Comment on Idaho DEQ's Partial Permit for Hazardous Waste at the AMWTP – After Causal Analysis Report of Drum Ruptures**

**Submitted by Tami Thatcher, October 29, 2018**

The Idaho DEQ public comment form has limited formatting and may be hard to read. Please see [www.environmental-defense-institute.org](http://www.environmental-defense-institute.org) for clearer formatting of these comments.

The Idaho Department of Environmental Quality has announced that it is seeking public comment on a draft hazardous waste storage and treatment partial permit renewal for the Advanced Mixed Waste Treatment Project (AMWTP) on the Idaho National Laboratory.<sup>i</sup> IDEQ states that “DEQ has reviewed the partial permit renewal application, determined that legal requirements designed to protect human health and the environment have been met, and proposes to issue the 10-year permit renewal.” DEQ further states that “The draft partial permit, public notice, and fact sheet are available for public review on DEQ’s website (download at right) and at DEQ’s State Office.”

The AMWTP treats radioactive and chemically-laden waste by compacting the waste. Much of the waste treated at the facility was shipped to Idaho from the Rocky Flats Weapons facility which produced nuclear weapons. Upon my calling the Idaho DEQ with questions, I was informed several times that all operations at the AMWTP over many years of operation have been safe.

The four waste drums that exploded in April 2018 at the nearby Accelerated Retrieval Project (ARP) had been repackaged by Fluor Idaho, the operating contractor for the Idaho Cleanup Project, under the Department of Energy at the Idaho National Laboratory site and the waste that exploded was from the AMWTP. The waste drums were to return to the AMWTP.

The fuller investigation of why the drums ruptured is ongoing. But Fluor Idaho completed an event causal analysis on October 1, 2018.<sup>ii</sup> I learned of the existence of the report at the Idaho Cleanup Project Citizens Advisory Board meeting held in Sun Valley on October 22. I was not informed of the report when I contacted the Idaho DEQ and Department of Energy earlier in the month and asked about the availability of drum rupture investigation documentation. Nor was the causal analysis report included in the response to my public records request to the Idaho DEQ on October 19.

The Idaho DEQ opened the public comment period for the AMWTP on September 28. The Idaho DEQ has strenuously maintained that the investigation of the causes of the four drum ruptures at the Accelerated Retrieval Project V (ARP V) is not relevant to the RCRA permit renewal for the AMWTP. The Idaho DEQ has emphasized that the AMWTP has an excellent safety record and that the drum rupture investigation is not needed in order for the Idaho DEQ to approve the RCRA permit for the AMWTP without any updates with regard to the causes of the drum ruptures at the ARP V.

The waste that overpressurized drums at the ARP, sending lids flying many feet, requiring fire protection response, spreading the radioactive and hazardous chemical contents of four drums throughout the facility. The drums that overpressurized were to return to the AMWTP.

The drums released their contents in an area where workers do not routinely wear respiratory protection. Also, fire fighters responding to the fire alarms when the first drum overpressurized were not aware of the elevated radioactive airborne contamination inside the ARP because the constant air monitors did not alarm due to extensive plugging with the excessive dust released by the drum overpressurization.

The causal report proves what I stated last year for the Materials and Fuels Complex outdoor storage of transuranic material RCRA permit: that the INL fire protection is not adequately integrated to address nuclear facility fire events. This is a vulnerability that I witnessed while working as a nuclear safety analyst at the INL. The causal analysis includes several issues pertaining to fire fighters not adequately understanding the radiological hazard at the drum event. Nor did the fire fighters have adequate information about the drum contents or how to control the smoldering contents. If the Idaho DEQ does not require specific fire protection procedures for each facility it permits, as other states have learned is necessary, then there will be no attempt by the DOE to address this longstanding problem.

The October Citizens Advisory Board meeting presentation states that contamination levels in the ARP ranged from 200,000 to 5,000,000 disintegrations per minute of alpha radiation. It is a miracle that workers and emergency responders were not gravely injured during the drum ruptures. <sup>iii</sup>

The fabric tent enclosure was not breached but was compromised by the heat and by one of the lids that penetrated the first layer of the enclosure. There would have been an extensive environmental release had the fabric enclosure of the tension membrane confinement been breached. It is a miracle that the radiological contamination was largely confined.

The waste that overpressurized the drums was assigned Item Description Code (IDC) SD-176 in February 2013. Waste with this IDC initiated processing in March 2016. This waste is from the AMWTP.

The direct cause of the event is the breach of four transuranic waste containers in ARP V resulting from the mixing of reactive uranium which began oxidizing in the presence of oxygen and heating the drum. This heating and the moist air during drum repackaging on a rainy day facilitated the hydrolysis of beryllium carbide in the waste, releasing methane gas and overpressurizing drums, sending the lids flying and spreading the powdery debris in the drums throughout the enclosure.

The casual analysis identifies that numerous RCRA requirements had not been met. The waste had not been adequately characterized and there was no plan to characterize the waste in order to ship the waste to the Waste Isolation Pilot Plant. No attempt was made to meet earlier revisions or the current WIPP Waste Acceptance Criteria. <sup>iv</sup> No chemical compatibility analysis had been conducted. No assessment of reactive and pyrophoric materials had been conducted. This is despite the illusion presented by hundreds of pages of RCRA documentation for the proposed permit renewal.

The hazard of pyrophoric and unreacted uranium was not recognized even though its RCRA permit prohibited pyrophoric material. Opportunities to understand that the unreacted uranium was pyrophoric include the box line fire event of December 2017 at the AMWTP discussed at the February 2018 ICP Citizens Advisory Board meeting.

An opportunity to understand the beryllium carbide reaction was missed was when several drums had high methane levels in the 2015 or 2016 timeframe, according to the causal report. The elevated methane levels disqualified sending those drums to WIPP. Those drums, the causal report states, are at the INL but I was unable to determine where or what the plan for their disposition is from the INL Site Treatment Plan that is updated annually. <sup>v</sup> The intent of the Site Treatment Plan is to always know that waste has a plan for its disposal and that this information is reviewed by the Idaho DEQ and made publicly available. Because it appears that the contents of those high methane drums was never understood, how can a plan to properly dispose of the drums have been created?

The causal report states that Fluor Idaho had no plan for meeting the WIPP Waste Acceptance Criteria for the SD-176 waste. Fluor Idaho had very little understanding from limited history of the origin of the drums what was in the drums. And Fluor Idaho chose to process the drums without conducting sampling and analysis to more properly assess what was in the drums.

The powdery appearance of the waste in the drums that overpressurized is consistent with calcium oxide, a component of Portland cement, that was commonly used at Rocky Flats to mix with acids containing radionuclides. The lack of liquids and lack of larger components in the waste seemed to imply to Fluor that the waste was safe to process, despite the large quantities of unreacted uranium in the waste. The RCRA permit identifies dozens of potential chemicals in the SD-176 waste. The required analysis of reactive material was not performed. The required chemical compatibility analysis was not performed.

The SD-176 waste stream had for years been simply “unknown” contents. But a list of spent solvents, delineated by the EPA’s F-List included F001, F002, F003, F004, F005, F006 and F007 and F009. The D-List included D004 through D011, D022, D027, D028, D029, D030, D032, D033, D034, D037, D043. Beryllium is not included in these codes. The Reactive Group Numbers (RGNs) were not identified in the RCRA permit, but would have been in documents referenced by the RCRA permit. We learn in the causal analysis report that no adequate or updated document existed for the SD-176 waste. Thus, the referenced document(s) were inadequate for the SD-176 waste stream of a couple thousand drums. It would be difficult to conduct a chemical compatibility analysis and analysis of reactive materials when the contents of the drum were not known. And it would have been time-consuming and expensive to conduct sampling. It is one thing to have a technically inadequate analysis of the hazards. It is another thing to have never conducted the RCRA-required analysis at all.

Fluor Idaho willing chose to create the illusion of having met the RCRA requirements, while knowing they had not made any attempt to meet the requirements. And the Department of Energy knew this. And Fluor Idaho chose to pretend that no nuclear safety unreviewed safety question existed when processing waste that they did not understand the contents of nor the pyrophoric and reactive material present not the chemical compatibility.

The Department of Energy violated its own orders for the unreviewed safety question process and violated its own DOE Order that requires having a plan for disposing of the waste prior to processing the waste. According to the causal report, “A documented plan or path to disposal was not established as required by DOE O 435.1, “Radioactive Waste Management,” prior to processing SD-176.”

The Department of Energy Occurrence Report database includes Idaho DEQ RCRA violations and warning letters. I found nothing to indicate that the Idaho DEQ recognized that

Fluor Idaho had not conducted needed RCRA permit required analyses for the ARP or for the AMWTP.

When the level of beryllium is not known in the drum, the proper plutonium-239 fissile gram equivalent limits cannot be determined in order to meet the WIPP Waste Acceptance Criteria. Levels of beryllium above 1 percent by weight have more restrictive fissile gram equivalent limits.

The drums of the SD-176 waste category were of homogeneous powdery-like material, but the contents of the drums regarding chemicals and radionuclides and reactive materials was unknown. Yet inexplicably, Fluor Idaho decided that mixing these drums contents, in order to lower the level of radioactive material to a level accepted at WIPP, would be no problem! This is despite knowing that they had not conducted a chemical compatibility analysis or other reactive or pyrophoric material analysis. Fluor Idaho had no plan as to how they would meet current WIPP Waste Acceptance Criteria even though it appears that Fluor expected to ship the waste drums to WIPP.

I hope that Idaho DEQ will study the causal report about the drum event and that they will take note of the numerous RCRA inadequacies that appear to be violations by the Department of Energy and its contractor, Fluor Idaho.

Beyond the causal analysis report, there have been recurring forklift and load handling mishaps at the INL, see DOE Occurrence Report EM-ID—FID-INLPROGM-2018-0002. And there has been serious underestimating of plutonium-239 equivalent curies following assay, see DOE Occurrence Report EM-ID—FID-RWMC-2018-0004.

Unreacted uranium was not recognized to create a hazard that would prompt drum overheating when the waste was unsealed. The opportunity for puncturing a drum during storage or transportation exists yet there is no indication that secondary energetic reactions are mitigated in emergency response procedures across the INL and the DOE Complex. It is not only at the ARP and not only drums with unreacted uranium and beryllium carbide that may pose unanalyzed hazards.

Does the Idaho DEQ still think that the drum ruptures at the ARP have nothing to do with the AMWTP? I think that along with the absence of meaningful RCRA permit violations for the RWMC and AMWTP for 2016 through 2018, there is compelling evidence that the Idaho DEQ is not competent to have RCRA permitting authority due to its corrupted culture of not questioning the Department of Energy.

## References

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<sup>1</sup>The Idaho Department of Environmental Quality (DEQ) is seeking public comment on a draft hazardous waste storage and treatment partial permit renewal for the Advanced Mixed Waste Treatment Project (AMWTP) on the Idaho National Laboratory, see <http://www.deq.idaho.gov/news-archives/waste-idaho-national-laboratory-permit-renewal-comment-092818/>

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- <sup>ii</sup> Idaho Cleanup Project Core, “Formal Cause Analysis for the ARP V (WFM-1617) Drum Event at the RWMC,” October 2018. [https://fluor-idaho.com/Portals/0/Documents/04\\_%20Community/8283498\\_RPT-1659.pdf](https://fluor-idaho.com/Portals/0/Documents/04_%20Community/8283498_RPT-1659.pdf)
- <sup>iii</sup> Fluor Idaho, Sun Valley October 2018 “Discussion with Citizens Advisory Board ARP V Drum Event,” October 2018. Fred Hughes, Fluor Idaho participating.
- <sup>iv</sup> Department of Energy, Carlsbad Field Office, WIPP Waste Acceptance Criteria, DOE/WIPP-02-3122, Revision 8 Effective July 5, 2016. [http://www.wipp.energy.gov/library/cra/CRA-2014/references/Others/US\\_DOE\\_2002\\_WIPP\\_Rev\\_6\\_TRU\\_Waste\\_Acceptance\\_Criteria\\_02\\_3122.pdf](http://www.wipp.energy.gov/library/cra/CRA-2014/references/Others/US_DOE_2002_WIPP_Rev_6_TRU_Waste_Acceptance_Criteria_02_3122.pdf)
- <sup>v</sup> “Site Treatment Plan” for the Idaho Site is difficult to find but the 2016 report is at the Idaho DEQ website at <https://www.deq.idaho.gov/media/60179380/inl-annual-site-treatment-plan-report-1116.pdf> and the 2017 report is on the Fluor Idaho website at [https://fluor-idaho.com/Portals/0/7519317\\_SiteTreatmentPlan.pdf](https://fluor-idaho.com/Portals/0/7519317_SiteTreatmentPlan.pdf)