

Public Comment on Idaho DEQ's Class 2 Permit Modification Request and Request for Temporary Authorization for the Advanced Mixed Waste Treatment Project Hazardous Waste Management Act/Resource Conservation and Recovery Act Permit Located on the Idaho National Laboratory, EPA ID NO. ID4780008952

Submitted by Tami Thatcher, August 29, 2019

Location of Permit Modification Request Documents

The Fluor Idaho, LLC and Department of Energy RCRA Permit Modification Request is at the indigitallibrary.inl.gov as document PRR 168971 at <https://indigitallibrary.inl.gov/PRR/168971.pdf>, posted July 31, 2019. Revision 45 of supporting document RPT-TRUW-05 is PRR 169082, posted August 13, 2019. Parts A and B of the RCRA permit are at PRR 167844 and 167842 from 2018.

Background

On July 25, 2019, Fluor Idaho, LLC and the U.S. Department of Energy Idaho Operations Office submitted this Permit Modification Request (PMR) with a Request for Temporary Authorization (RTA) to the State of Idaho, Department of Environmental Quality. This PRM modifies the Advanced Waste Treatment Project (AMWTP) RCRA permit to remove Permit Condition III.J.1., provides additional operational actions to be taken in the event of a thermal reaction, and makes other changes.

The Idaho DEQ granted Temporary Authorization on July 29, 2019, days before this PMR was available to the public and more than 50 days before the public comment period was to end on September 23, 2019.

The July 25, 2019 letter on this PMR states: "This PMR/RTA provides for: addition of administrative and engineered controls and emergency equipment to support processing of legacy waste containing potential pyrophoric radionuclides in WMF-676, removal of Permit Condition III.J.1., addition of training for personnel involved in these operations and fire watch, addition of Fire Department preplanning information, and addition of operational actions taken in the event of a thermal reaction."

PMR Change to Permit Condition III.J.1. to Allow Treatment of Pyrophoric Radionuclides, Not Just Storage

The longstanding Permit Condition being removed is "Permit Condition III.J.1. The Permittee [Fluor Idaho and DOE] shall not perform treatment of pyrophoric radionuclides." The boxlines and the Supercompactor and other treatment capabilities have not been designed or analyzed for treatment of pyrophoric radionuclides. This PMR does not provide comprehensive, technically adequate or adequately reviewed analyses to support such large changes to operational controls. The boxlines and supercompactor, in particular are not designed to accommodate pyrophoric or reactive waste constituents. Vague or nonexistent criteria appear to be used with day-to-day operator discretion for deciding whether the waste is to be designated as containing "pyrophoric radionuclides" or other problematic constituents.

PMR Change to Permit Condition III.J.1. to Allow Treatment of Pyrophoric Radionuclides, Applies to All Buildings at the AMWTP

The Permit Condition III.J.1. is in the III.J. Ignitable or Reactive Waste section and applies to all building and storage locations at the AMWTP. This change in the PMR makes a blanket change to waste treatment in every building at the AMWTP with the removal of Permit Condition III.J.1, even though this PMR only addresses treatment at one building, the WMF-676 “Treatment Facility.”

Module III that contains Permit Condition III.J.1 of the AMWTP permit addresses WMF-636, WMF-29 through WMF-633, WMF-634, WMF-628, WMF-610, and WMF-636 Pad 2 in addition to WMF-676. (The AMWTP Outside Storage Area does not allow containers identified as containing pyrophoric radionuclides.) Waste **treatment which can mean repackaging and other activities** is allowed in WMF-636, WMF-29 through WMF-633, WMF-634, WMF-628, WMF-610 as well as WMF-676. But this PMR only addresses the hazards associated with removal of Permit Condition III.J.1 in WMF-676.

If as the Permittee contends, that the restriction on the treatment of pyrophoric radionuclides changed in III.J.1. only applies to WMF-676, then there is no restriction on the **treatment** of pyrophoric radionuclides in buildings other than WMF-676 when the granting of the PMR. But this would still mean that the PMR only addresses the new concerns over pyrophoric fire hazards while in WMF-676.

This Change Requires Additional or Different Management Practices and Therefore Should Be A Class 3 Permit Change Rather Than a Class 2 Permit Change

The change includes additional and different management practices for treatment of the waste while not in a container. Even more importantly, this change is not a change listed in Appendix I to 270.42. This PMR, because the change is under “other modifications” [40 CFR 270.42(d)] would require a determination by the Director to be other than Class 3. There is no documentation provided to indicate that such a determination was requested, nor that the Director made the determination necessary to conclude the change was other than Class 3.

The original permit modified the federal definition of “treatment” to include the uncontainerized **storage** of waste in treatment or pending treatment. While this may create confusion in determining what regulations apply, the fact is that this PMR must be a Class 3 Permit change.

The regulations specific to monitoring of containers may seem to not apply to uncontainerized waste. But the uncontainerized waste, with unique permit definitions is requiring additional or different management practices from those authorized in the permit for storage of waste would also mean that a Class 3 permit modification would be required. [Appendix I to 270.42, (F)(3)(a)]

Excerpts from 40 CFR 270.42: (d) *Other modifications.* (1) In the case of modifications not explicitly listed in appendix I of this section, the permittee may submit a Class 3 modification request to the Agency, or he or she may request a determination by the Director that the modification should be reviewed and approved as a Class 1 or Class 2

modification. If the permittee requests that the modification be classified as a Class 1 or 2 modification, he or she must provide the Agency with the necessary information to support the requested classification.

Supporting Documentation for the Additional or Different Management Practices Was Not Provided in the PMR

The reliance on an analysis or study that is unique and not provided as a supporting document in the PMR means that the PMR submittal was incomplete. Furthermore, the analysis for the “rake and hold” operational control has been reviewed by the Defense Nuclear Facilities Safety Board and deemed technically inadequate to base the conclusion that the waste will not further react in adverse ways, such as rapid drum overpressurization that breaches the drum or that creates flammable hazards with excessive gas build-up in the drum. For the DEQ Director to grant temporary authorization without either the current revision of RPT-TRUW-05 or any revision of the analysis for the “rake and hold” was to improperly grant the Temporary Authorization without review that it met the necessary requirements of 40 CFR 264, etc. and without a complete set of supporting documents for the PMR.

PMR Wrongly Assumes No Uranium Fines or Particles Smaller Than 3 mm

The analysis in the PMR submittal to decide the amount of pyrophoric uranium to be allowed in the boxlines is technically flawed in two obvious ways. First, it makes the unsafe assumption that the **minimum** uranium particle size is that of “scarf” and is 3 mm. In the same PMR, it is documented that smaller uranium particles can be expected to be present, as perhaps 10 percent of the uranium. Second, zirconium and aluminum may be in the waste and are pyrophoric metals. The flawed acceptable knowledge documentation is unreliable to determine pyrophoric materials when these may be present and in what amounts. And while the pyrophoric uranium can be radio-assayed, the undocumented and unexplained waste co-mingling that occurred at ARP V means that there will be times during processing or treatment when the amount of uranium and the amount of other pyrophoric materials in the waste is not known.

The Pyrophoric Uranium and the “Rake and 24-hour hold-time” Control

The unreacted uranium may include hydrides and may have variable characteristics depending on the particle size in the waste. Smaller particles of uranium may be oxidizing without visible sparkling when stirred, for example. In addition, carbides and specifically beryllium carbide appear to be allowed or allowed on the basis that it isn’t known when waste contains these. Carbides generate methane when exposed to moisture.

The analysis of the assumed neutralization of the un-oxidized uranium relied on heavily in the PMR does not appear to have received adequate scrutiny and review. This uranium is not roaster oxide previously incinerated at Rocky Flats that the AMWTP has extensive experience with.

Supporting documents pertaining to the technical analysis for the “rake and 24-hour hold-time” control are still not available to the public. Apparently, the analysis is documented in EDF-11124 “ARP-VIII Resumption and Supporting Thermal Analysis,” April 25, 2019. Newer revisions of

this document may also be needed if corrections have been made to the document since approving the Temporary Authorization.

The Defense Nuclear Facilities Safety Board (DNFSB) communicated in a letter to the DOE on March 12, 2019 that Fluor Idaho's "rake and 24-hour hold-time control" was inadequate and "would not reliably prevent the creation of new drums with high methane concentrations." Fluor Idaho's "rake and 24-hour hold-time" control does not appear to be safe in either the use of the boxline, the packaging of drums or the use of the Supercompactor.

Time Limit on Storage in WMF-676 of 72 hours in Definition of "Storage"

The 72-hour time limit defined in Definitions in the permit may be exceeded, regarding uncontainerized waste storage. The PMR allows indefinite continuation of 24-hr hold times.

WMF-676 Allows Treating Sludge including waste from Rocky Flats Building 444

There appear to be disconnects in the understanding of whether or not WMF-676 allows treatment of "sludge." The safety controls and waste characterization of "sludge" matters because WMF-676 allows treating up to 49 percent by weight sludge, as estimated by personnel. The allowed RF 761 waste stream includes Rocky Flats Building 444 waste which may include beryllium in amounts greater than 1 percent by weight. Importantly, the RPT-ESH-014 document from 2015 still relied upon in the AMWTP permit and PMR does not include beryllium.

Criteria for determining when waste contains pyrophoric radionuclides may be vague, or even if specific as for the Boxlines, may not be protective in other locations or other storage or treatment activities

This PMR fails to define criteria for when waste is to be considered "potentially pyrophoric." In fact, the changes made to supporting document RPT-TRUW-05 pertaining to constituents in the waste and the use of RF-761 only serve to further cloud the understanding of how much beryllium, beryllium carbides, other carbides, zirconium, or unreacted uranium are in the waste.

The Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria include special limits on Fissile Gram Equivalent when beryllium is present in non-trace amounts. Only sampling can determine the beryllium concentration which has been shown to be wrongly assumed to be in trace amounts in existing and past permit supporting documents. Specifically, RPT-ESH-014 still wrongly assumes beryllium, zirconium and uranium are in trace amounts. Other wrong waste characterization assumptions can be gleaned from the Fluor report by Rod E. Arbon et al., Idaho Cleanup Project Core, Prepared for DOE EM, "Technical Analysis of Drum Lid Ejections – ARP V," RPT-1662, December 2018. <https://www.dnfsb.gov/sites/default/files/meeting/RPT-1662%20ARP%20V%20Technical%20Analysis.pdf>