



December 21, 2023

Comments submitted electronically via the Federal eRulemaking Portal:

<https://www.regulations.gov/commenton/EPA-HQ-OLEM-2023-0372-0001>

To Whom It May Concern,

Thank you for the opportunity to submit comments on the Proposed Rule posted on Nov 28, 2023 for the Department of Energy Hanford Mixed Radioactive Waste Land Disposal Restrictions Variance, Docket ID No. EPA–HQ–OLEM–2023–0372 (Treatability Variance). We also want to thank the Environmental Protection Agency (EPA) for taking the time to meet with us to answer our questions about the Treatability Variance.

Hanford Challenge is a non-profit, public interest, environmental, and worker advocacy organization located in Seattle, WA. We are an independent 501(c)(3) organization incorporated in the State of Washington since 2008 and registered in Oregon. Our mission is to create a future for the Hanford Nuclear Site that secures human health and safety, advances accountability, and promotes a sustainable environmental legacy.

Hanford Challenge has members who work at the Hanford Site. Other members of Hanford Challenge work and/or recreate near Hanford, where they may also be affected by hazardous materials emitted into the environment by Hanford. All members have a strong interest in ensuring the safe and effective cleanup of the nation’s most toxic nuclear site for current and future generations, and who are therefore affected by conditions that endanger human health and the environment.

The concept of grouting Hanford’s tank waste is now progressing to Phase 2 of the Test Bed Initiative (TBI) and this Treatability Variance is part of testing the regulatory process to make grout possible in a legal framework that requires vitrification. As we understand it, the Treatability Variance granted by EPA to the US Department of Energy (USDOE) will allow 2,000 gallons of tank waste from SY-101 to be exempt from the rule that it be vitrified. Instead of vitrification, this waste would be treated to remove cesium via an in-tank pre-treatment system and tested to ensure the treatment worked. If the treated waste meets the Waste Acceptance Criteria, then it would be sent in liquid form in totes to two offsite commercial treatment and disposal facilities in Clive, Utah, and Andrews, Texas, for grouting and disposal in shallow lined landfills. The waste will be tested after it is grouted for the purpose of validating treatment

performance. It is unclear what happens if grout fails this test, fails to set, or encounters another issue offsite.

The Treatability Variance states “The proposed approval applies only to the 2,000 gallons of separated, pretreated supernate from Tank SY-101.” However, later in the same paragraph it states: “Thus, the TBI could provide the basis for a broader approach under which these distinctions [between grouting and vitrifying] would be more significant.” The implications and precedence that may be set by this Treatability Variance are concerning to Hanford Challenge. It was reassuring to hear from EPA that any future variance would not be a catch-all variance, but instead apply to waste from a specific tank due to the varied chemistry of the waste in each of Hanford’s tanks. However, the intent from USDOE to scale up a grout program for more of Hanford’s tank waste and send it offsite is clear and we have not experienced or witnessed USDOE exercising a cautious, credibility-boosting approach to selling grout. We worry that grout is just another runaway train of tank waste treatment promises that will cost more time and money than it will purportedly save.

Hanford Challenge does not endorse plans to grout Hanford’s tank waste. We continue to support the long-standing litmus test of “as-good-as-glass” for any alternative tank waste immobilization technology and have yet to see grout pass this test. We remain unconvinced that grout will pass tests it has failed in the past related to large waste volume disposal issues, high costs, technical issues with the grout formulas and variability of Hanford’s tank wastes, and issues with long-lived radionuclides not staying immobilized.

We are also wary of a highly curated test being used by USDOE to greenlight a larger grout program at Hanford due to the high variability in the waste chemistry from tank to tank. Testing grout for SY-101 waste only tells us about grouting waste from SY-101.

Hanford Challenge’s concerns with grout were shared most recently in a March 2023 blog post titled “[Should we grout tank waste at Hanford?](#)”, our June 2022 [comments to the National Academy of Sciences](#) on the Federally Funded Research and Development Center (FFRDC) report on Supplemental Low Activity Waste, our January 2022 [comments on the Draft Waste Incidental to Reprocessing Evaluation for the Test Bed Initiative](#), our September 2021 [comments on the Draft Environmental Assessment for the Test Bed Initiative](#), a June 2021 timeline titled “[Why Grout Failed at Hanford: Chronology of the Failed Grout Program](#)”, an April 2021 FAQ titled “[Relabeling and Grouting Tank Waste at Hanford Frequently Asked Questions](#)”, and a January 2021 paper “[Grouting 80% of Hanford’s Tank Waste?](#)” responding to a 2020 report from USDOE to Congress in favor of grouting Hanford tank waste.

When it comes to treating Hanford’s tank waste we care about:

- What radionuclides and chemicals are in the final grouted waste form.
- Where the waste is treated.
- How technical issues are addressed. For example: grout formulas, nitrates, nitrites, Technetium-99, and Iodine-129 leaching out of the grout.
- How cost savings and schedule projections have been calculated.
- What major assumptions have been made and how they have effectively been communicated to the public.
- How systemic issues have been addressed to prevent another large-scale government project to treat tank waste from going off the rails.
- How consent has been achieved for disposal facility siting and transportation routes.
- How the public has been meaningfully involved in reviewing and providing input on a complete and thorough plan that describes grouted tank waste aspirations.

In reviewing the Treatability Variance, we noted EPA echoing arguments supporting grout that we will respond to below. In general, we noticed that EPA did take the time to point out that the differences between grout and vitrification when considering 2,000 gallons of tank waste are minimal, yet tended to emphasize arguments that only apply to a scaled-up version of grouting Hanford's tank waste. The overall assumptions about grout being faster and cheaper than vitrification seem to be based on everything going smoothly in this test. Setting aside our concerns about grout, it seems like USDOE would learn more about grout if testing was completed on tank waste that is more representative of the varied complex chemistry in Hanford's tanks. USDOE should want to work through the uncertainties and uncover challenges, rather than set up a test with simplified waste and fail later because the conclusions do not translate to the more complex tank waste.

EPA states that grouting and disposal offsite frees up tank space that is in short supply and deals with leaking tanks. The statement that Single-Shell Tank retrievals would be completed decades faster using grout versus vitrification relies on assumptions that there are no technical problems, no cost overruns, and no schedule delays. These assumptions seem unrealistic given USDOE's track record of technical problems, cost overruns, and delays. Rather than embarking on an experimental grout program, Hanford Challenge believes that building new tanks is a reliable solution to create additional storage space for tank waste.

EPA states that grout is better than vitrification because it doesn't create a secondary waste stream of contaminated off gas liquids that have to be treated. The Treatability Variance states that this secondary waste stream is avoidable and unnecessary due to the "efficacy of grouting." We're concerned with this turn of phrase which implies that grouting Hanford's tank waste and all of its chemical complexity has been robustly tested. It hasn't. The lack of efficacy

was one of the reasons USDOE canceled the grout program at Hanford in the past. We have also heard that some of the issues with grout formulas might be solved by increasing the volume of grout to waste, which could increase total waste volumes needing disposal. The volumes of grouted waste being disposed are estimated to be at least 3 times the liquid volume or more. The calculations of increased volumes of grouted waste needing disposal were another reason why grout failed in the past. Also not mentioned is how the heat of vitrification destroys nitrates/nitrites, unlike grout. Past studies show that nitrates/nitrites leach out of grout. SY-101 waste was chosen preferentially due to its low organics, which have historically been an issue for grout disposal. A test with low-organics waste cannot give a realistic picture of future disposal challenges for waste which may have more organics.

Another argument reiterated in the Treatability Variance is that grout saves a lot of money, but also states that cost savings estimates vary. "EPA recognizes there are differences in reporting how much time, cost, and secondary impacts would be reduced by grouting some of the Hanford low-activity waste rather than vitrifying it." We are glad this caveat is included. Since cost seems to be one of the top drivers for choosing grout over vitrification, it is critically important to point out that claims of cost savings that rely on the grout program working without problems is problematic.

There are multiple references to how grout will speed up the tank waste treatment mission, but also statements that schedule estimates vary. Once again, we appreciate this caveat. It is not stated or discussed that systemic issues within USDOE have yet to be addressed and continue to lead to cost overruns and delays at Hanford. We expect this pattern of behavior to continue with a new grout treatment program if these systemic issues are not directly addressed. Hanford Challenge has yet to see or be convinced that grout is going to change USDOE's pattern of behavior. USDOE's claim that grout will be faster than vitrification once again relies on unreliable assumptions and magical thinking that nothing goes wrong and everything works.

Hanford Challenge is wary of the conclusion that because grout worked on a small, curated 3-gallon liquid waste sample, it is going to work on 2,000 gallons of SY-101 waste, and because the 2,000 gallon sample will likely work, all of the cost and schedule estimates will hold up on larger waste volumes. It is important to note that grout has yet to be proven effective on more complex Hanford tank waste and arguably this 2,000-gallon test is not going to provide information on the more complex, varied tank waste that would be involved in a scaled up grout project.

The Treatability Variance demonstrates that EPA is confident the 2,000-gallon test will work, despite the fact that the test has not happened yet. We would like to see more language in the Treatability Variance discussing uncertainties with grout, including what happens if the test

doesn't work. It seems like proponents of grout would agree that it is critical to identify problems through a test and develop a plan to deal with them, yet we do not see that happening. We understand that EPA's specific role is to test a regulatory process by which the vitrification requirement no longer applies, not argue for or against grout. However, the arguments EPA uses in the Treatability Variance to support the vitrification exemption will likely be used to support scaling up the grout program.

We were interested in the argument that vitrification is a more complicated option for 200 West Area low-activity tank waste because there isn't infrastructure to get the waste to the Waste Treatment and Immobilization Plant's (WTP) Low-Activity Waste (LAW) facility. However, if in-tank pre-treatment and shipping totes of liquid waste all the way to Utah and Texas is possible, then it seems like it would be easier to treat and ship that waste in totes to an existing staging tank for vitrification at the LAW facility. And if the argument stands that glass loading may be much more efficient than originally estimated, then we may not need supplemental treatment at all and potentially all of the waste could be vitrified.

Hanford Challenge is also concerned with the indication that offsite impacts to groundwater contamination do not matter at Clive, Utah, and at Andrews, Texas, because water is not being used or is not potable. We would like to see EPA include a discussion of Technetium-99 and Iodine-129 impacts offsite and technical issues with these long-lived radionuclides leaching out of a grouted waste form.

We were very concerned about footnote 35 which raised a red flag about USDOE's desire to remove requirements for post-treatment sampling in the future. We greatly appreciate EPA including this footnote in the Treatability Variance to make USDOE's intention clear to the public. We believe it would be irresponsible for EPA to allow for a removal of the requirements for post-treatment sampling of tank waste in the future. As discussed throughout, the varied complexity of waste in each individual tank is a critical factor for post-treatment testing and sampling results.

One of the pieces of the Hanford cleanup puzzle is reclassification and reinterpretation of high-level waste (HLW). The following points make clear our opposition to USDOE's Federal Register Notice reinterpretation of HLW. Despite verbal assurances that USDOE does not intend to apply the reinterpretation at Hanford right now, Hanford Challenge is concerned that USDOE will use the HLW reinterpretation in the future. USDOE should not have unilateral authority to reclassify HLW waste. An open avenue must remain to challenge the reclassification of the waste and to hold USDOE accountable. Hanford Challenge is not categorically against the reclassification of HLW. Under certain conditions, reclassifying HLW could be appropriate. Hanford Challenge believes that the reclassification of HLW is acceptable where:

- There is a presumption that HLW (which includes long-lived radionuclides and chemicals) will be vitrified and buried in a deep, geological repository;
- There is an agreed-upon understanding that long-lived radionuclides presumptively require disposal in a geological repository;
- The use of reclassification is used in “special and unusual” circumstances – not wholesale to reclassify substantial portions of HLW and never for expediency or economic cost-savings reasons;
- The HLW has been treated and key radionuclides have been removed;
- An independent entity (such as a new agency or commission created for the purpose of nuclear waste disposition) makes the determination to reclassify the waste;
- There has been an open, transparent, and inclusive process involving interested stakeholders;
- The State of Washington and the affected Tribal Nations concur;
- There is a comprehensive report specifying what waste volumes/concentrations are being left at Hanford, for how long, and why;
- An assessment of the cumulative impact on the environment and future generations is prepared and made publicly available; and
- There is a judicial process available for aggrieved parties to challenge a determination in federal court.

Thank you so much for considering our comments.



Nikolas Peterson, Executive Director
Hanford Challenge
P.O. BOX 28989
Seattle, WA 98118
206-292-2850
NikolasP@HanfordChallenge.org