

Comments on Nuclear Regulatory Commission (NRC) Proposed Rule
Integrated Low-Level Radioactive Waste Disposal NRC 2011-0012

Comments of
Nuclear Information and Resource Service (NIRS)
Don't Waste Michigan (DWM)~Oregon Conservancy Foundation (OCF)
Snake River Alliance (SRA)~Sowing Justice~Citizens Awareness Network (CAN)

NRC 2011-0012
Integrated Low-Level Radioactive Waste Disposal
[[91 FR 125: 40290-40327, 7/1/2026]]
August 17, 2026

“Low-Level” Radioactive Waste is far from low risk. Some can give a lethal dose unshielded in less than a half hour, according to the Government Accounting Office. Over the decades many efforts have been made by promoters of waste sites to minimize concern or understanding of this largely nuclear power waste stream. Over 90% of the radioactivity in so-called “low-level” radioactive waste comes from nuclear power, and this is the major source of the more-concentrated Classes B and C. The changes in this proposed rule are clearly for the sake of new nuclear power, which could generate hotter, more concentrated high and “low-level” nuclear waste, and for cheaper management of existing GTCC which is currently on a track to accompany high level waste to whatever permanent repository is established. The rule change opens the door to any level of waste getting into so-called “low-level” radioactive waste trenches and holes, shallow land burial with the swipe of a pen and a run through a probabilistic performance assessment. This is a clear effort to allow as much of the waste without a destination and future waste that might be generated to have a path into the 10CFR61/agreement-state-licensed disposal sites...sites that already operate in 4 states and sites that could be started up as part of the proposed Nuclear Innovation Campuses or Hubs being dangled before 5 states as these rules move to finalization. It may seem convenient but it is not justified by safety, security, environmental and public health.

Laws being violated by this proposal include the Atomic Energy Act, Energy Reorganization Act, Nuclear Waste Policy Act and Amendments, Low-Level Radioactive Policy Act and Amendments Act, Administrative Procedures Act, National Environmental Policy Act, Safe Drinking Water Act, Clean Water Act, Clean Air Act, Endangered Species Act.

A Little “Low-Level” History

At the dawn of the nuclear age, there was a massive push (Manhattan Project) to build the first atomic bombs in the United States. The mission, the excitement and focus were on the amazing power and force of atomic technology, the bombs and reactors that resulted. The waste was an afterthought shunted aside. The waste that could go critical or cause immediate deaths got some respect. High level waste was identified as the irradiated or “spent” fuel that came from the reactor core, the liquid and sludge from reprocessing it and the solid into which it was converted. The other stuff was treated like dishwater—thrown in ditches, “cribs,” industrial waste sites and released into slag and into streams. Eventually it was named “low-level” waste even though some is more concentrated than DOE weapons high level waste. Concern arose about that waste

at nuclear weapons sites and the nuclear fuel chain facilities. Some Department of Energy (DOE) sites dug their own waste pits or sent radioactive, hazardous and mixed waste to other DOE sites. Nuclear power sites buried some on site but then 6 commercial so-called low-level waste sites opened, licensed by the Atomic Energy Commission and then Agreement States (WA, NV, IL, KY, NY, SC). In the 1970s once it was known that all the sites were leaking (later documented in a Conference of Radiation Control Program Directors [CRCPD] report by the E-5 team led by Paul Merges, NYS DEC), the US Congress (many Senators not realizing it was mostly from the nuclear power fuel chain, some completely aware of it) passed the Low-Level Radioactive Waste Policy Act and its amendments in 1980 and 1985 (PL 99-240). In 1980, states were tasked with providing disposal for the radioactive waste commercially generated within its borders, even though they did not license or necessarily approve of its production. In 1992, the Supreme Court ruled that states cannot be forced to take liability for that waste, which had been a motivator for states to find new waste disposal sites in the 1980s and 90s.

Leaky Dumps, Site Searches, Institutional Control, State and DOE responsibilities, GTCC

The dozens of siting efforts in at least 30 states over decades ended up with Waste Control Specialists (for Classes A, B and C and a DOE pit) licensed by Texas, and EnergySolutions licensed in Utah (Class A only) as the 2 new sites since the original 6, 4 of which closed. US Ecology in Washington and ChemNuclear in South Carolina, continue operations. The Barnwell, SC site has been found by a court to be leaking—it ruled that new waste disposed there should not be allowed to leak but it does not appear there is any effort underway to prevalent or recapture the waste that has been leaking since the 1970s. The public and native nations have been watchdogging the Hanford US Ecology site. At least one organization expressed opposition to this proposed rule change because it will “update” the dosimetry allowing the site to give 25 millrems per year to members of the public but with the “updated” dosimetry it will allow 25 millrems effective dose equivalent (mr ede) which allow more radioactivity per rem for 87% of the radionuclides. Communities and public interest groups in Utah do not want Depleted Uranium brought in and buried at the EnergySolutions Clive facility. There is a long history of battles over allowing DU which gets more radioactive as it decays, to be treated like the least concentrated Class A which is only supposed to be dangerous for 100 years or less.

There was sizable public opposition to many of the 1980 LLRWPA provisions, including the expectation that waste that is hazardous much longer than 100 years (including portions of Classes A, B and C) could be buried in the 10 CFR 61/agreement-state-licensed trenches, because they are only required to have 100 years of institutional control. Put another way, the NRC can only take credit for 100 years of institutional control when calculating the doses to people that might encounter the waste site in the future. The growing public demand on Congress members and decision makers was to limit waste that can be dumped at the licensed sites to that which only remains hazardous for 100 years—that is it undergoes 10-20 half lives in 100 years. Since the regulations allow burial in the unlined soil trenches there is obvious concern that it will leak out, like at every other waste burial site, radioactive or not.

Congress addressed the question of which wastes would go into state licensed waste sites. The 1985 LLRW Policy Act Amendments (PL 99-240) clarified that Classes A, B and C, as defined in 10 CFR § 61.55, are the responsibility of the states in which they are generated. The United States Department of Energy was given responsibility for disposal of commercial radioactive wastes that have concentrations of radionuclides “Greater Than Class C” or GTCC.

Whether GTCC is licensed by the NRC or Agreement States, it must **not** be buried in soil trenches with a 100 year institutional control period, or even a 10,000 performance period, mainly because it will be dangerous for much longer. The NON-solution to bury it deeper is inadequate and ignores the risk to aquifers and the water supply.

Depleted uranium DU actually gets more dangerous over time— it decays to progeny that are longer lasting than the previous radionuclides in the decay chain. Since Class A has a 100 year institutional control period, waste that becomes more dangerous after that time should not be permitted in a Class A facility such as EnergySolutions in Utah, or in the portion of other license facilities that is for Class A. We support the comments of HEAL Utah on this rulemaking.

The Waste Control Specialists site in Texas is licensed for Classes A, B and C. Due to the presence of water in the burial areas, it should be re-assessed for its adequacy in isolating the Classes A, B, C waste being disposed there, not considered for additional, even more deadly GTCC wastes. We support the comments of the Lone Star Chapter of Sierra Club regarding this rulemaking.

Current Sites and Regulations for Classes A, B and C are already not fully protective.

Allowing GTCC, DU, Reprocessing waste and more will make it worse.

Institutional Control, Compliance and Performance Periods, PPAs

Instead of pretending all is well with the current regulatory scheme and proposing to make it worse, NRC should tighten the controls at the existing sites and guarantee better goals for isolation of waste at new sites.

There are many who would argue that current 10 CFR Part61 and Agreement State regulations are inadequate for Classes A, B, and C because the reality is that the waste will still be radioactive and potentially harmful for much longer than the time periods used to designate the Classes, or the various Institutional Control, Compliance and Performance Periods. Even the NRC's own Advisory Committees on Nuclear Waste and on Reactor Safety have struggled with staff and waste generators over the inability to predict or promise controls or protection from waste in future centuries and millenia. Simply naming a time range as Compliance or Performance Period does nothing to isolate waste. They simply give the illusion of control where none exists.

The assumptions by NRC in the proposed rule that the current regulations and existing sites are adequate require verification. NRC wants to assume it's all okay now, so expanding a bit more for GTCC, DU, reprocessing wastes and any other wastes outside the 10 CFR § 61.55 limits can be managed, as long as a performance assessment is done to say so. There is an additional concern that it is possible the performance assessments could be kept secret to protect corporate confidentiality so the public cannot even question the assumptions and equations, computer codes and models that will be used to claim hotter, longer lasting waste can be disposed at shallow-land burial sites.

NRC should not accept the current assumptions, and should not stretch those assumptions in the proposed rule and in the accompanying probabilistic performance assessments that claim that radioactive exposures will be acceptable hundreds, thousands, tens of thousands of years from now....not to mention that some of the waste will remain radioactive and potentially dangerous

for much longer. Whatever rules result from this process, it is important that NRC require public access to all analysis, inputs, assumptions, expert elicitations and data that will be used for site specific assessment or PPAs seeking to expand the waste site inventory, seeking permission to take GTCC, DU and all other additional wastes.

Although it is clear that some of the radionuclides in the Classes A, B and C waste streams will be radioactively dangerous for hundreds, thousands, and literally millions of years, NRC claims that isolating them for much shorter time periods is all that is needed. Now, the proposed rule pushes the envelope even further, claiming that GTCC, Depleted Uranium (DU), reprocessing waste and more can go into the trenches—albeit deeper down, without providing any analysis for the proximity of underground water resources deeper down. NRC says that can be safely isolated— A waste for 100 years, B waste for 300 years and C waste 500 years. Class A waste can have plutonium 239 (half life 24,000 years) and iodine 129 (half life 16 million years) as well as strontium 90 (half life 28 yrs) and cesium 137 (half life 30 years). Of course multiply the half life by 10 or 20 for general length of hazard

It doesn't matter whether creative, magical new “Compliance Periods” and “Performance Periods” are written about or calculated, there is no physical way to isolate waste for those periods of time—especially in shallow land burial facilities.

Inadequate Cost Benefit Analysis

The cost benefit analysis in the proposed rule and RA completely ignore costs to members of the public and communities potentially impacted by the waste sites. Then this is balanced against minimal and questionable benefits to nuclear generators and regulators. These should be redone. NRC should watch what is happening now in Niagara County, NY where radioactive and hazardous waste buried decades ago is surfacing in peoples homes, businesses, parks and communities. Look at the potential costs, which NY and the federal agencies clearly don't want to pay.

What are those costs? What are the costs to people exposed in the future? How far into the future to care? We call on the calculations to use a zero discount rate as future values are valid and should not be minimized. We support critiques of this by other commenters including Fred Schofer.

We ask that the proposed rule and RA be withdrawn because

- they do not honestly assess the risks and costs to the environment and public,
- they allow unaccountable probabilistic performance assessments to be used by the very entities that would profit from taking additional waste, creating a clear conflict of interest, with an inability for public review or oversight,
- they predict unrealistic future scenarios, risks, exposures and doses, that could cause significant health, environmental and economic harm
- they fail to provide an honest cost-benefit analysis using existing guidance including NUREG-1530. Part of the materials needed for the analysis have in fact been deleted,

HUBS- Nuclear Innovation Campuses-next generation of LLRW dumps

This rule impacts states with existing nuclear waste burial sites (WA, SC, TX, UT) and proposed nuclear innovation campuses or hubs, specifically Idaho, Utah, Tennessee, Louisiana and Oklahoma. Public input is being stymied.

Regarding just one of the 5 potential hub states, Tennessee, we provide these preliminary observations:

>The proposal destroys anything remaining of ALARA

> By shifting responsibility to states, there will be no NEPA compliance demanded or expected as disposal or burial projects are changed, moved, expanded or modified as to wastes being disposed. The same is true for the National Historic Preservation Act and the Endangered Species Act. The only environmental impact assessment will be that required by state regulatory agencies applying their weak and variable regulations.

Regarding access to records, shifting responsibility to states means a shift from fixed federal standards to site-specific performance-based practices. So in Tennessee, for example, there will be a need to get access to records which no longer are reachable through the federal Freedom of Information Act, but are covered exclusively by TN public records laws. All the new mandatory technical documentation required to be maintained by the operator will get moved behind shields in TN law of corporate confidentiality, business secrecy, and technical means of record keeping.

Again using Tennessee as an example, primary erosion of records access will occur as follows:

1. Trade secret shield on Waste Acceptance Criteria (WACs) and performance assessments. Under the current system, waste definitions are hardcoded in NRC's public tables (Classes A, B, C). Under the new rules, facility operators will engineer their own site-specific WACs. And commercial operators will be able to treat their custom blending formulas, chemical binding grouts, and proprietary safety algorithms as protected commercial data. Commercial operators will be able to heavily redact records requests under state-law protections for trade secrets and privileged commercial and financial info. In the particular case of Tennessee, the state's Public Records Act restricts records requests exclusively to Tennessee citizens, blocking national environmental watchdogs, out-of-state journalists, and downstream communities from inspecting the files. Tennessee public records laws will severely limit records access to day to day operational logs, facility manifests, routine state inspections, etc. all records generated and held by TDEC.

2. There'll be a lot of black box modeling and technical obfuscation. Commercial operators will justify taking in GTCC waste by submitting thousands of pages of complex, computerized groundwater migration and intruder simulations. It'll be difficult to impossible for someone from the public to decipher or understand. Even if a public record requester successfully pries loose a summary of the performance assessment, the underlying source code, active assumptions, and specific software tools used to build the models are likely – highly likely – to remain as commercial, proprietary secrets. Imagine trying to get TDEC to intercede and make a giant waste handler hand over secrets. often commercial property. The public will get tons of data but no functional way to audit for manipulation of inputs or evaluation of results.

3. Even in situations where federal FOIA might apply, GTCC and transuranic wastes possess significantly higher levels of radioactivity than standard Class A trash. Since such concentrated radioactive materials present viable dirty-bomb or proliferation risks, operators can easily claim that detailed inventories, shipping logs, and deep-trench engineering maps must be withheld under FOIA Exemption 7 (Law Enforcement and Critical Infrastructure) or categorized as Sensitive Unclassified Non-Safeguards Information (SUNSI) to prevent sabotage.

4. There would be a shift to site-specific WACs. Operators would develop localized WACs based on Tennessee's specific geology, hydrology, and climate factors. In designing safety models, operators will transition away from federal standards and create new dosimetry frameworks under 10 CFR Part 20, which is arguably also being gutted.

To justify these new customized disposal limits, an existing operator will have to provide updated technical reviews. They'll be required to simulate future scenario risks like someone ignorantly building a home on the site 500 years from now, using localized parameters to prove long-term safety. Enhanced modeling will be required to track how long-lived radionuclides migrate through local water tables over thousands of years. What's to keep a great deal of AI slop modeling from being submitted to an overwhelmed TDEC whose staff members are looking to go through the revolving door to waste generators which have triple the salary and who aren't particularly interested in getting to the truth? And even if they get to the truth, the record of public TDEC enforcement is not illustrious or strict. While this same obscurity arguably pertains at the NRC, there is a slightly better capability for enforcement up to and including criminal referrals.

5. TDEC is accused of being weak on enforcement. TN handles a very large share of the nation's low-level waste and so extensive dependence has built up over decades on TDEC being financed largely because of regulatory fees per pound of waste disposed of. Cutting down waste streams or reduction of private operators' business viability will cause TDEC to lose income for operations.

6. Then there's the whole concept of commodifying GTCC. Previously, highly concentrated GTCC wastes like decommissioning hardware or large sealed industrial sources lacked a commercial disposal pathway and remained stranded at reactor sites. Now, if an operator can provide (real or fictionalized) technical analyses to satisfy safety goals, they can expand operations to construct near-surface or specialized deep-trench disposal units to take in GTCC waste.

This whole scheme shifts enormous responsibility to TDEC (in TN), where there is a perception that radioactive waste disposal is a business opportunity and where there is pre-existing resistance to "overregulation." The Tennessee legislature will more than ever see lobbying for restrictions on what TDEC can and cannot do in this brave new delegated world. TDEC will have to do a very complicated and lengthy rulemaking that will include not just waste tracking, and determination of transportation routes, but also tying this new waste disposal phase into TN's push for a nuclear lifecycle innovation campus.

Summary of Issues of Concern

We oppose the proposed rule NRC 2011-0012 Integrated Low Level Radioactive Waste Disposal. Withdraw it.

Don't allow GTCC, DU, reprocessing waste and other long lasting and/or intensely radioactive wastes into 10CFR61/Agreement state licensed burial grounds.

Compliance and Performance periods—the illusion of long term protection—claiming isolation for 1000s or 10s of thousands of years with no provision or possibility to verify or enforce—open door to higher concentration and longer lasting waste without real changes in methods of isolation, monitoring and reporting; no plans or guarantees that future leakage will not exceed projected levels. NRC Advisory Committees raised serious concern. Rather than heed their advice, the Advisory Committees are being eliminated.

Probabilistic performance assessments PPAs are already black box, blank checks for waste disposal operators to claim their facilities will never exceed given doses and dose ranges, thus can allegedly manage GTCC, DU, reprocessing and other wastes.

Implications for nuclear energy campuses or hubs which, if they happen, are likely to be the next generation of nuclear waste burial grounds.

We protest the very short comment periods on major rulemaking running simultaneously and failure to provide any extensions. We request an additional 30 days to continue our assessment of the LLRW Rule changes in NRC 2011-0012

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