74 FR 30175
6/24/09
(32)

PUBLIC SUBMISSION

As of: November 05, 2009
Received: October 30, 2009
Status: Pending_Post
Tracking No. 80a4ed1d
Comments Due: October 30, 2009
Submission Type: Web

Docket: NRC-2009-0257
Notice of Public Workshop on a Potential Rulemaking for Safe Disposal of Unique Waste Streams Including Significant Quantities of Depleted Uranium

Comment On: NRC-2009-0257-0001
Public Workshop: Potential Rulemaking for Safe Disposal of Unique Waste Streams Including Significant Quantities of Depleted Uranium

Document: NRC-2009-0257-DRAFT-0022
Comment on FR Doc # E9-14820

Submitter Information

Name: Christopher Thomas
Address:
HEAL Utah
68 S. Main Street, Suite 400
Salt Lake City, UT, 84101
Organization: HEAL Utah

General Comment

Please consider the uploaded comments on NRC-2009-0257-0001 submitted by the Healthy Environment Alliance of Utah (HEAL Utah). Please feel free to contact me if you have any questions or difficulty receiving our submission.

Attachments

NRC-2009-0257-DRAFT-0022.1: Comment on FR Doc # E9-14820

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add: C. Grossman (cjg2)
B. Traynham (bnt1)
P. Yadav (ppy)

October 30, 2009

Chief, Rulemaking and Directives Branch
Division of Administrative Services
Office of Administration, U.S. Nuclear Regulatory Commission
Mail Stop TWB 5B01M, Washington, DC 20555–0001

Reference ID: NRC–2009–0257; Federal Register published June 24, 2009. See page 30175.

Submitted online at http://www.regulations.gov

To Whom it May Concern:

I am writing on behalf of the Health Environment Alliance of Utah (HEAL Utah) and our supporters to express several concerns and suggestions regarding your proposed rulemaking related to the safe disposal of depleted uranium.

HEAL Utah is a public interest group dedicated to protecting public health that advocates on nuclear power, nuclear waste, and toxic waste issues. HEAL Utah is supported by nearly 600 active contributing members and maintains an email distribution list of over 4,000. We have worked on many issues involving radioactive waste disposal in Utah, including the disposal of foreign nuclear waste, Class B and C nuclear waste, waste from the Fernald, Ohio, cleanup, and the high-level waste Private Fuel Storage (PFS) proposal.

Please consider the following comments:

1) Unique waste streams should be given a new regulatory definition of "unclassified," rather than grouped under the rubric of "Class A" waste. This "unclassified" group should be defined to include all kinds, volumes, and concentrations of waste not explicitly covered in the "Final Environmental Impact Statement on 10 CFR Part 61 Licensing Requirements for Land Disposal of Radioactive Waste," NUREG–0945, 1982. For all such waste streams, a scientifically defensible site-specific performance assessment demonstrating compliance with the performance objectives of 10 CFR Part 61 subpart C must be required prior to disposal in a near-surface facility. Significant quantities of depleted uranium would fall into this "unclassified" category.

2) Uranium waste streams resulting from the reprocessing of spent nuclear fuel must fall under the "unclassified" rubric and must be specifically prohibited from near-surface disposal pending site-specific analysis.

3) At the workshop held in Salt Lake City on this topic, several participants remarked that significant quantities of depleted uranium are materially different than waste that currently falls under the "Class A" rubric. For example, Dr. David Kocher, from SENES Oak Ridge, said, "It's increasingly clear that DU really is a different beast in the following way. I think everybody in this room would admit that if DU were submitted to waste classification in the same way that other stuff was 30 years ago, it's not Class A waste."[1] He went on to say that it's not really Class C waste, either, since Class C wastes were conceived to be small in volume. He concluded that significant quantities of depleted uranium cannot be adequately covered by the current classification system.

---

[1] See NRC transcript at http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams/workshop-2-transcripts-day2.pdf, p. 188

4) Federal regulations define Class A waste as presenting "an acceptable hazard" to an intruder after 100 years (see **10 CFR § 61.7 Concepts.**) Significant quantities of depleted uranium will continue to present a significant hazard far beyond 100 years. On its face, then, depleted uranium cannot be considered a "Class A" waste under the existing Federal definition and framework.

5) The time period of performance for a performance analysis on "unclassified" waste streams, including significant quantities of depleted uranium, should be to the time of peak activity or the time of peak dose. The state of Texas has adopted this approach in their rules. **See Texas Rule §336.709 - Technical and Environmental Analyses.** The NRC reviewed this rule without comment in 2003. If the NRC artificially limits the period of performance, agreement states should be able to require a longer period of performance.

6) If the NRC defines a period of performance shorter than the time of peak dose or peak activity, this would represent a significant change to the Federal radiation protection standards. See **10 CFR § 61.41 Protection of the general population from releases of radioactivity**. Such a change would necessitate that the current rulemaking be abandoned and two new rulemaking procedures be conducted in tandem, one to deal with depleted uranium and unique waste streams, and another to deal with changes to Subpart C radiation protection standards.

7) Currently, Federal standards limit organ dosea to 25 millirems (mrem) annually. See **10 CFR § 61.41 Protection of the general population from releases of radioactivity.** The NRC staff analysis on depleted uranium released in October of 2008 (part of SECY-08-0147) did not adequately calculate doses to organs. In other words, doses to organs were only considered insofar as they contributed to an overall body dose. In this framework used by NRC staff, an organ could receive greater than a 25 mrem dose in a year, yet the performance objective as measured to the whole-body would still be *under* 25 mrem per year. As a result, the NRC staff analysis on depleted uranium likely under-estimated the hazard of depleted uranium buried in a near-surface disposal facility.

8) NRC staff's analysis in SECY-08-0147 suffers another major flaw when it comes to considering changes in climate. For instance, NRC staff assumed that the near-surface disposal facility would continue to function as designed over the period of performance, even over a period of one million years. Design features such as waste stability, cover, and disposal depth of depleted uranium were assumed to remain constant. This approach directly contradicts staff guidance provided in SECY-96-103. In that 1996 memo, Executive Director for Operations James M. Taylor writes, "Significant uncertainty exists in predicting long-term design life and degradation rates of engineered barriers. Staff recommends that typical engineered barriers be assumed to be physically degraded after 500 years after site closure." Such an assumption as articulated in 1996 appears consistent with the overall regulatory framework for near-surface disposal facilities, namely that they should present "an acceptable hazard" after 100 years and that the site should not require "active maintenance" following closure. That NRC staff would subsequently prepare an analysis in 2008 that assumes a near-surface disposal site continues to function as designed in perpetuity defies logic and good sense. As a result, the NRC staff's October 2008 analysis likely underestimates the hazard associated with depleted uranium disposed in a near-surface facility.

9) NRC staff's SECY-08-0147 was likewise flawed because it did not take into account dramatic changes in climate that can take place over the timeframes examined (thousands to millions of years). Dr. Peter Burns from Notre Dame University observed the following: "It's kind of funny in

a way to listen to people say it's dumb to model a million years. I agree. It's probably almost as dumb to model 10,000 years in reality because the climate change cycles etc. that we talk about in a million years they all happen in 10,000 years as well. In 10,000 years we could well be under 1,500 feet of water or some ludicrous thing here as we're in another glacial period and we have a pluvial lake on top of Salt Lake City and who knows?[2]" Defensible modeling of impacts requires that assumptions be made about the climate. But over long time periods, from 10,000 to 1 million years, the climate can dramatically change. Such dramatic changes in climate may actually preclude defensible modeling over such long timeframes nearly everywhere at the Earth's surface. Therefore, the long-lived hazard posed by significant quantities of depleted uranium may naturally preclude near-surface disposal nearly everywhere at the Earth's surface.

10) Federal rules require that areas be avoided where surface geologic processes "may preclude defensible modeling and prediction of long-term impacts." See **10 CFR § 61.50 Disposal site suitability requirements for land disposal.** HEAL Utah hereby incorporates comments submitted by Dr. Steve Nelson, Dr. Charles G. Oviatt, and Dr. Summer B. Rupper on the present rulemaking that indicate a nearly 100% likelihood that one such near-surface disposal facility in Utah will be inundated and washed away by rising lake levels sometime in the next 100,000 years. Such a finding should preclude this specific facility and any other similarly-susceptible facilities from receiving significant quantities of depleted uranium for disposal. Dr. Peter Burns from Notre Dame University appeared to concur in the following comment: "I was outside at lunch and I was looking up at that hill over there and being a geologist I could easily figure out what the erosion rate is on that hill and I could figure out okay so we're going to have some climate change and ... I could bury the depleted uranium in a location where it's fine for 10,000 years but at 15,000 years it's exposed and gone. So you absolutely have to have a consideration of peak dose. You can't put it somewhere where you know that in 20,000 years or whatever it will not be there.[3]"

11) The way the Commission has framed the proposed depleted uranium rulemaking is artificially narrow and appears to point to a pre-determined outcome. Dr. Kocher seemed to get at this when he noted, "A comment that has kind of opened my eyes here is that there seems to be an implicit understanding here that we're developing a rule for near surface disposal and I'm pretty convinced from what I've heard that the NRC should open the possibility that near surface disposal may simply not be appropriate for this stuff, for whatever reason. I mean it's conceivable that you might reach such a decision.[4]" We believe that any proposed rulemaking should allow for the possibility of a requirement that significant quantities of depleted uranium be disposed in deep geologic disposal.

12) If uranium were defined as a transuranic element, then significant quantities of depleted uranium would require deep geologic disposal based upon the radiological properties of uranium. Transuranic wastes are currently disposed thousands of feet underground at the Waste Isolation Pilot Plant (WIPP) in New Mexico. We believe that, based on its physical properties and toxicity, significant quantities of depleted uranium must be treated under the transuranic waste regulatory framework, if disposed as a waste.

---

[2] See NRC transcript at http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams/workshop-2-transcripts-day1.pdf, page 226

[3] See NRC transcript at http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams/workshop-2-transcripts-day1.pdf, page 225

[4] See NRC transcript at http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams/workshop-2-transcripts-day1.pdf, page 239

13) Chemical toxicity of significant quantities of depleted uranium must be considered in the required site-specific performance analysis. Dr. Kocher raised this issue: "The issue I want to raise is about chemical toxicity of depleted uranium. One of the frequently asked questions in the communication plan raised this issue and basically the answer was the NRC is not going to deal with this. I would suggest that's not an enlightened approach. It may turn out that chemical toxicity is not more important than radiation dose from depleted uranium, but it may not, the opposite may be true."[5] If the NRC does not require an analysis of the chemical toxicity associated with depleted uranium, then any such analysis could grossly underestimate health impacts associated with depleted uranium disposal in a near-surface facility. The most recent toxicological information on depleted uranium must be included in such analyses. If the NRC does not conduct this analysis, Agreement States should require this type of analysis prior to disposal of significant quantities of depleted uranium.

14) The performance assessment must consider the physical and chemical form of the depleted uranium, and whether the disposal facility constitutes a reducing or oxidizing environment.

15) Compliance with Environmental Protection Agency (EPA) standards for airborne releases of radionuclides must also be demonstrated over the relevant timeframes during which significant quantities of depleted uranium remain hazardous.

16) The performance assessment must include an on-site intruder scenario in order to adequately account for the radiological impacts to an inadvertent intruder; Federal rules require as much: "Design, operation, and closure of the land disposal facility must ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste at any time after active institutional controls over the disposal site are removed." **See 10 CFR § 61.42 Protection of individuals from inadvertent intrusion.** The inadvertent intruder should be protected at a level of 25 mrem per year.

17) As some point in the next 10,000 years it is perfectly plausible that an attempt will be made to recover energy-producing material from our current waste sites. It is difficult to model this type of intrusion in a standard risk assessment, but that does not mean that the risk of deliberate intrusion should be ignored during the rulemaking.

18) The new proposed rule for depleted uranium must require that a site be owned in perpetuity by either a State or Federal agency, prior to any proposed disposal of significant quantities of depleted uranium in a near-surface facility. Because depleted uranium will remain hazardous over timeframes that companies cannot be expected to survive (thousands to millions of years), and near-surface disposal facilities can reasonably be expected to degrade after 500 years, a viable long-term custodian must be identified who will actively manage and repair the disposal site and its hazardous constituents. As a side-note, this new requirement would be in direct conflict with current regulation, which state, in part: "The analyses must provide reasonable assurance that there will not be a need for ongoing active maintenance of the disposal site following closure." **See 10 CFR § 61.13 Technical analyses.**

19) The performance assessment must examine the effects of all decay-chain radionuclides resulting from depleted uranium, most especially including radium-226 and radon gas. A radon-flux standard is not sufficient to ensure performance objectives are met.

---

[5] See NRC transcript at http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/uw-streams/workshop-2-transcripts-day2.pdf, page 263

20) Permitting the disposal of significant quantities of depleted uranium, as the proposed rule does, constitutes a major Federal action and triggers requirements under the National Environmental Policy Act (NEPA). An Environmental Impact Statement (EIS) must be conducted and allow for an examination of all relevant alternatives for depleted uranium management, including deep geologic disposal and monitored retrievable storage, among others.

21) Colloidal transport of radionuclides must be considered in a site-specific performance assessment.

22) Most radioactive material cleanups today are the result of bad technological and policy decisions made in the last 50-70 years. It is highly likely that the DU disposal being done now will seem inappropriate within the next few centuries. Thus, retrievability and the possibility of future site cleanups should be considered in any site-specific analysis.

Please feel free to contact me if you have any questions or wish to speak with me further.

Sincerely,

Christopher Thomas
Policy Director, HEAL Utah
801-355-5055