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Docket: NRC-2011-0012
Low-Level Radioactive Waste Disposal

Comment On: NRC-2011-0012-0077
Low-Level Radioactive Waste Disposal

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General Comment

See attached file(s)

Attachments

NRC Comment

Catherine Haney
Director
Office of Nuclear Material Safety and Safeguards
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Low-Level Radioactive Waste Disposal (Docket ID: NRC-2011-0012)

April 23, 2015

Dear Administrator and Staff,

I am writing in response to the U.S. Nuclear Regulatory Commission's (NRC) proposed rule to amend the regulations that govern low-level radioactive waste (LLRW) from their disposal to long term storage to better provide comprehensive protection of public health and safety. By revising part 61 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Licensing Requirements for Land Disposal of Radioactive Waste adopted on December 27, 1982 (47 FR 57446), the NRC holds sites disposing of low level radioactive waste to higher safety performance standards. I commend the NRC for their commitment to safeguarding the public from harmful radioactive exposure through the provisions of the proposed rule and I would urge the commission to additionally take further steps and expand safety requirements into other identified classes of radioactive waste.

Implications of Proposed Ruling

The NRC, along with states, regulates the management, storage and disposal of commercial radioactive wastes from non-military uses of nuclear material². Studies have demonstrated the harmful effects of radiation exposure from inadequate identification, disposal and storage of low level radioactive waste.

The benefits of this proposed rule are achieved by:

- Ensuring that low level radioactive waste separate from those identified in current regulations can be disposed of safely and meet waste site performance objectives¹
- Using site-specific and updated dosimetry methodology for technical analysis to improve public health and safety outcomes¹

Although the estimated costs of the proposed ruling are predominately assumed by industry, states and the NRC, the outlined benefits of the proposed regulatory initiative are significant in enhancing public health and safety by ensuring the safe disposal of LLRW not analyzed in the regulatory basis for the original part 61 of Title 10 already.

Health Concerns of Low Level Radioactive Waste

The proposed ruling revises existing technical analysis frameworks to allow for greater safety and to identify existing inept site design features. These reassessments indicate that the proper and safe disposal and storage of radioactive waste is an issue, even for low level radioactive waste materials³. Low level radioactive waste are items that have been contaminated directly or indirectly from radioactive exposure that have not been identified as high level or uranium and thorium milling wastes¹. Ranging from clothing items such as protective body covers to laboratory equipment and nuclear equipment with broad ranges of radioactive contamination, low level radioactive waste account for over 90% of the total radioactive waste volume and if not properly disposed of safely, can result in harmful environmental and health effects⁴. Although some radiation occurs naturally, the NRC requires that its licensees limit maximum radiation exposure from sites to the public to less than 5 mSv per year and limit occupational radiation exposure to workers dealing with radioactive material to less than 50 mSv; levels beyond this are suggested to be mitigated because of their prescribed effect on human health⁵. This proposed rule on low level radioactive waste would limit that annual dose limit to less than 5 mSv and increase the site compliance period through 10,000 years. As states begin to designate their own low level radioactive waste storage sites within this proposed framework it is imperative to consider the health effects of exposure to radiation and the public health benefits of reduced exposure.

Health effects of radiation exposure³:

- Severe skin burns
- Hair loss
- Central nervous system damage
- Birth defects
- Cancer

Depending on the half-life of the radioactive isotopes in various low level and higher grades of radioactive waste, the more important secure disposal reveals to be. However, further expansion of safety measures regarding radioactive disposal sites across all radioactive waste levels are needed as well to further protect against site failures caused by land subsidence, human error or natural disaster⁶. Currently there are disposal and storage concerns with storage sites that range from inadequate protection of the general public from radioactive releases, protection of individual from inadvertent intrusion, long term site stability and testing and site inspection, all of which if corrected, will result in significant strides toward effective site management and public safety.

Call for further action

Although regulatory bodies suggest a radiation exposure annual dose limit, research suggests that due to the carcinogenic potential of radioactive potential at any level, that limiting exposure to levels far below these limits are advised⁷. This proposed ruling aims to limit

stochastic seepage from storage sites minimal detectable levels, almost a half of current advised levels. Further action should be taken to better dispose and secure radioactive waste in the future building on the concepts and standards of this proposed rule such as:

- Standardizing and consolidating standards regarding the transportation, design and operation of radioactive storage facilities.
- Enhancing measurement apparatus to accurately conduct radiological assessments to better detect and reduce stochastic radioactive seepage from storage sites.
- Enforcing effective site evaluation and management standards to construct a permanent high level nuclear waste disposal facility.
- Reducing the total volume of radioactive waste by converting to more sustainable alternatives.

Conclusion

In conclusion, LLRW and other grades of radioactive waste, without proper safeguard measures, pose significant risks to the public and I urge FRC to continue with the proposed rule while also considering avenues reduce public exposure from other higher grade radiation storage sites. The proposed measures implement a stronger risk management framework regarding protecting public safety and dually integrating both an analysis and design and control approach that strengthen these protection initiatives. Minimizing the dose threshold for the public, further detailing the waste criteria for low level radioactive waste and raising site specific standards to meet outlined performance objectives are significant and translatable radioactive waste management elements. Therefore, I recommend these same risk management principles be increasingly implemented as it relates to higher grades of radioactive waste as well to better ensure public health and safety.

Thank you for your consideration,

Sincerely,

O.M

References

1 U.S Nuclear Regulatory Commission. Fact Sheet: Proposed Rule for Low-Level Radioactive Waste Disposal. Available at

<http://www.regulations.gov/#!documentDetail;D=NRC-2011-0012-0077>

2 U.S. Draft Regulatory Commission. Draft Regulatory Analysis for Proposed Rule: Low Level Radioactive Waste Disposal(10 CFR Part 61). Office of Nuclear Material and Safeguards. February 2015

3 U.S. Agency for Toxic Substances and Disease Registry. Summary of Health Effects of Ionizing Radiation. Public Health Service 1999.

4 U.S. Environmental Protection Agency. Radioactive Waste: An Environmental Perspective . Available at

<http://www.epa.gov/radiation/docs/radwaste/>

5 U.S. Nuclear Regulatory Commission. NRC Regulations: 10 CFR Waste Classification. Available at <http://www.nrc.gov/reading-rm/doc-collections/cfr/part061/part061-0055.html>

6 Nuclear Energy Institute. Nuclear Waste Management: Low Level Radioactive Waste. Available at <http://www.nei.org/Issues-Policy/Nuclear-Waste-Management/Low-Level-Radioactive-Waste>

7 U.S. Nuclear Regulatory Commission. Radioactive Waste: Production, Storage Disposal Available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0216/r2/br0216r2.pdf>