

# PUBLIC SUBMISSION

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

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

**Document:** NRC-2011-0012-DRAFT-0133  
Comment on FR Doc # 2015-06429

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## Submitter Information

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**Organization:** Brigham Young University American Nuclear Society student Chapter

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## General Comment

-See Attached-

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## Attachments

BYUANS\_NRC\_comments



# American Nuclear Society

## Brigham Young University

The American Nuclear Society Student Section at Brigham Young University has reviewed the proposed rule for 10 CFR Parts 20 and 61 regarding Low-Level Radioactive Waste Disposal and have concluded that when approaching this decision with the correct perspective the NRC's proposed rules are sufficient to safely regulate the disposal of low-level radioactive waste without overbearing costs to industry. Of particular interest to our student section was the question posed by the NRC for public feedback on whether 5 mSv (500 mrem) per year is an appropriate analytical threshold for the protective assurance period. Based on calculations and appropriate references, we have concluded that 5 mSv per year is a reasonable and safe threshold.

Some would argue that any exposure to radiation is harmful. However, 5 mSv represents a radiation dose comparable to 1 CT chest scan, and is less than the dose we receive in the U.S. as reported by the NCRP. Utah experiences even higher doses because of higher elevation. Therefore, we believe 5 mSv is a reasonable and safe threshold.<sup>1</sup>

We have also performed calculations suggesting that the activity of DU does not increase significantly until around 100,000 years after its disposal (see included charts). These calculations are based on the analytical solution to the differential equations governing the radioactive decay of uranium-238 and uranium-235. Our calculations also show that more important than the increase in radioactivity per se is maintaining a long-term barrier between the public and the alpha emissions of the decay products (especially 222 Rn). This is why, once again, we approve of the NRC taking steps to ensure such a barrier is in place to limit the public dose rate to 5mSv. Also, we believe that the best way to protect the public is to move this waste from its current on site storage to a long term storage facility such as Energy Solutions.

Furthermore, we believe that if EnergySolutions passes the NRC's proposed three tier performance assessment, the threat to the general public will be sufficiently mitigated while concurrently providing Utah with a valuable resource. Depleted Uranium can be used as fuel in advanced reactor designs and so even though this waste can be safely disposed of for thousands of years, this waste will likely be used as fuel well before the disposal facility degrades. Utah already has a well-established nuclear fuel industry. According to Energy Fuels, a uranium mining company, its White Mesa Mill in Blanding UT can produce 8 million lbs of uranium annually.<sup>2</sup> Extending Energy Solutions ability to store this low level waste would provide Utah with a potential fuel source could potentially benefit Utah's economy for decades.

Some have raised concerns that in the case of the return of Lake Bonneville there is a chance of exposure to the public. We believe this is not a concern. If Lake Bonneville were to return, there would be major complications that heavily outweigh the threat of radiation including major cities being

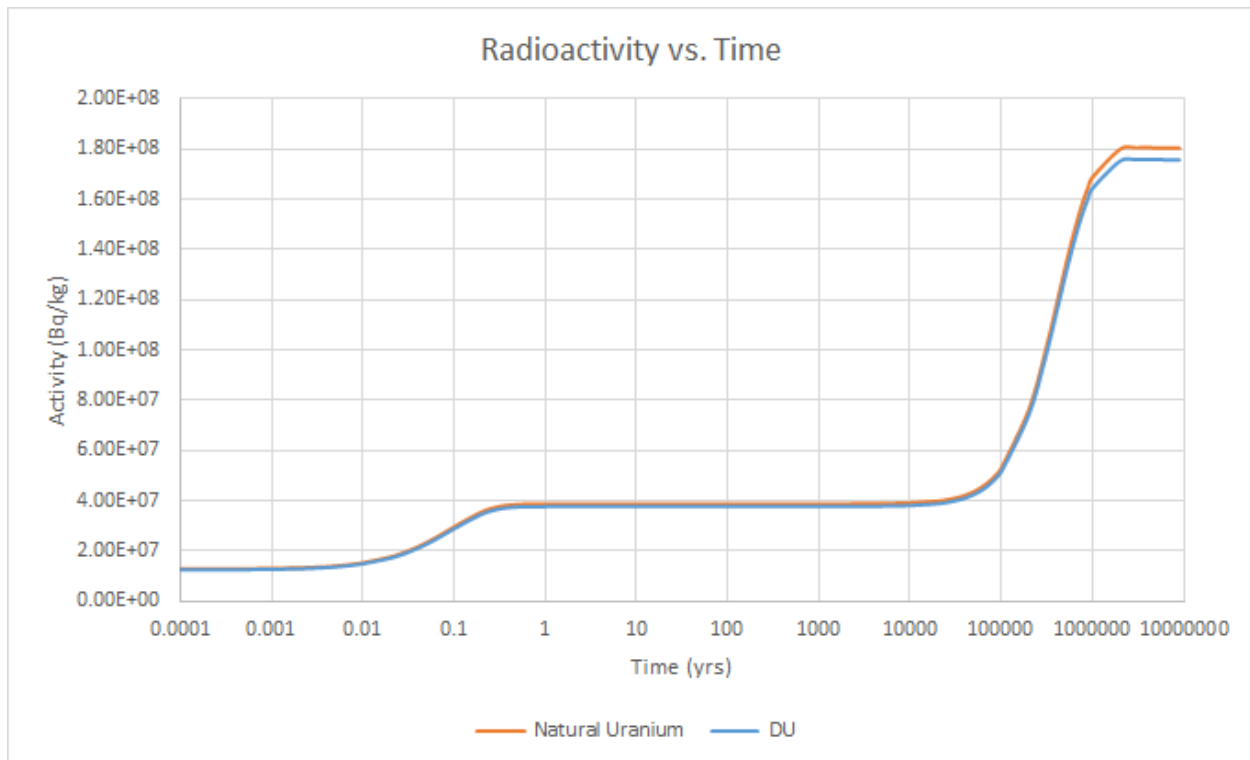
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<sup>1</sup> <http://www.ncrponline.org/PDFs/Poster.pdf>

<sup>2</sup> [http://www.energyfuels.com/mobile/white\\_mesa\\_mill](http://www.energyfuels.com/mobile/white_mesa_mill)

submerged. The Salt Lake City International Airport standing at 4227 ft in altitude would be submerged before the Clive facility standing at 4288 ft.<sup>3</sup>

In conclusion, we believe that the 5 mSv exposure limit is a safe and reasonable limit. Moreover, we believe that the NRC's proposed performance assessment is sufficient to protect the public from any potential harm.



<sup>3</sup> <http://www.mappery.com/map-of/Lake-Bonneville-Levels-Map>