

**From:** [Carolyn Lauron](#)  
**To:** [Justin Hawkins](#)  
**Cc:** [Greg Cranston](#); [Jordan Glisan](#); [Michael Dudek](#); [Andrew Brenner](#)  
**Subject:** NRC Staff Response to SMR (Holtec) Questions re: Radwaste Management (RG 1.143)  
**Date:** Wednesday, January 25, 2023 10:12:00 AM

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Hi Justin –

Please find the NRC staff response to the subject question below.  
Please let us know if you need additional information.

Thanks,  
Carolyn

### Question 1:

Does the NRC intend to revise RG 1.143 Revision 2 (~2001)? Has the NRC staff revisited the review performed in 2020 on RG 1.143 (see ML20190A131)?<sup>[1]</sup> <sup>[2]</sup>

#### Context for the question:

The NRC 2020 review states, in part, that *“The threshold for buildings is based on an unmitigated exposure for site personnel inside the protected area (i.e., worker dose) of 5 rem and an unmitigated release at the protected area boundary (public dose) of 500 mrem. However, the 500 mrem value is based the previous public dose limit from 10 CFR 20, which was changed to 100 mrem in the 1990s. This change should be addressed in a future update to the RG.”*

It also states, in part, that *“In addition, there are other items that should be addressed in the future revision to RG 1.143, including: (1) the RG should provide guidance on how to perform the unmitigated dose calculations or indicate what assumptions should be made in performing the calculation; and (2) the RG should clarify whether waste in storage should be considered in the classification of SSCs...”*

### NRC Staff Response:

The NRC staff is not actively working on an RG 1.143 update. The most current information regarding the status of RG 1.143 is in the 2020 periodic review.<sup>2</sup>

Regarding the public dose criteria, NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants,” provides the most recent NRC position regarding the 100 mrem criteria. NUREG-0800, Chapter 11, “Radioactive Waste Management,” Sections 11.2, “Liquid Waste Management System,” 11.3, “Gaseous Waste Management Systems,” and 11.4, “Solid Waste Management System,” all state that for the unmitigated release of radioactive material in RG 1.143, the acceptance criterion is 100 mrem.<sup>[3]</sup> Applicants should use 100 mrem for the criteria unless an alternative is justified.

### Question 2:

Can the staff provide a good example of an unmitigated dose calculation for us to review

that has been performed recently?

### **NRC Staff Response:**

The NRC staff has not provided guidance on how to perform the unmitigated dose calculation. Most applicants have classified the Radwaste and Auxiliary Buildings which contain the majority of radwaste systems and associated components as RW-IIa or have exceeded RW-IIa design criteria. In this case, an unmitigated dose calculation is not necessary. Licensees that have buildings classified less than RW-IIa must ensure that the quantities of radioactive material in the building will not result in exceeding the unmitigated release dose criteria. The NRC safety evaluation report for Chapter 11 of the combined license application for Levy Nuclear Plant, Units 1 and 2, and the applicant's responses to support the evaluation, provide information on the NRC staff evaluation of an unmitigated release calculation for a radwaste building that only contained limited radwaste processing

equipment and associated radioactive material controls. [\[4\]](#), [\[5\]](#), [\[6\]](#) The NRC staff notes that RG 1.143 only provides guidance for facility (building) classifications of RW-IIa and RW-IIb.

### **References:**

1. U.S. NRC, Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water Cooled Nuclear Power Plants," Revision 2, dated November 2001. (Agencywide Documents Access and Management System (ADAMS) Accession No. ML013100305)
2. Memorandum from M. Franovich to L. Lund, "Results of Periodic Review of Regulatory Guide 1.143, Revision 2," dated July 29, 2020. (ML20190A131)
3. U.S. NRC, NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 11, "Radioactive Waste Management." <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/ch11/index.html>
4. U.S. NRC, "Final Safety Evaluations for Levy County, Units 1 and 2 Application," Chapter 11, "Radioactive Waste Management," dated May 31, 2016. (ML113530635)
5. Progress Energy, "Levy Nuclear Plant, Units 1 And 2 Docket Nos. 52-029 and 52-030 Response to Request for Additional Information Letter No. 110 Related to Radioactive Waste Management, dated February 11, 2013. (ML13044A566)
6. Duke Energy, "Levy Nuclear Plant, Units 1 and 2 Docket Nos. 52-029 And 52-030 Revised Response to Request for Additional Information Letter No. 112 Related to Radioactive Waste Management," dated September 12, 2013. (ML13259A147)