

## Regulatory Guide Periodic Review

**Regulatory Guide Number:** 1.143, Revision 2

**Title:** Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants

**Office/Division/Branch:** NRO/DSEA/RPAC

**Technical Lead:** Edward Stutzcage

**Staff Action Decided:** Revise

**1. What are the known technical or regulatory issues with the current version of the RG?**

RG 1.143, Rev. 2, was issued in November 2001, as part of an effort to update guidance on radioactive waste treatment and processing structures, systems, and components (SSCs). The revision addressed the design, construction, testing, and quality assurance guidance for these SSCs. Rev. 2 allows flexibility in the design requirements for these SSCs based on the potential radiological hazards associated with the SSCs (i.e. SSCs containing less of a radiological hazard can be designed less robust than SSCs with a larger radiological hazard). 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 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.

Additionally, two additional issues that should be included in a future update to RG 1.143 are: (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 (e.g., it is unclear if waste in storage areas, including waste packaged for shipment in accordance with 10 CFR 71, "Packaging and Transport of Radioactive Material," is within the scope of the RG and should be included within the SSC classification calculations).

**2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?**

Thus far, these issues have resulted in challenges associated with the current use of RG 1.143 for staff and applicants; including the need for several rounds (in some cases) of Requests for Additional Information (RAIs) for some applications. If not corrected in a future update to the RG, the identified items could have significant schedule impacts for future reviews.

- 3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contract resources?**

Revision of the RG will take approximately 0.2 FTE of NRC staff time.  
No contract dollars are needed.

- 4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Revise.

- 5. Provide a conceptual plan and timeframe to address the issues identified during the review.**

Develop and finalize plan for revision of RG 1.143 by the first quarter of FY 2020.  
Circulate for internal NRC review with completion estimated by the third quarter of FY 2020. Following internal processing in NRC, the staff expects to release a draft RG for public comment in fourth quarter of FY 2020.

**NOTE: This review was conducted in March 2018 and reflects the staff's plans as of that date. These plans are tentative and subject to change.**