

RESULTS OF EVALUATION FOR RELATIONSHIP BETWEEN LTR AND ON-SITE DISPOSAL UNDER 10 CFR 20.2002

1. BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) has the authority to approve on-site disposals under 10 CFR 20.2002. This regulation does not establish a clear standard for approval, but allows Agency discretion, on a case-by-case basis, as long as the action remains within the public dose limit of 1 millisievert/year (mSv/yr) [100 millirem/year (mrem/yr)]. Specifically, the rule requires licensees to demonstrate how they meet the dose limit in 10 CFR Part 20. The public dose limit in 10 CFR Part 20 is 1 mSv/yr (100 mrem/yr), whereas the “Statement of Considerations” for the License Termination Rule (LTR) explains that 0.25 mSv/yr (25 mrem/yr) in the LTR is a dose constraint. On-site disposals must be reconsidered at the time of license termination, and the LTR unrestricted release dose constraint at that time is 0.25 mSv/yr (25 mrem/yr) and as low as is reasonably achievable (ALARA). Furthermore, as the Timeliness Rule in 10 CFR 30.36, 40.42, and 70.38 also applies to on-site disposals, licensees may have to reevaluate the dose contribution of approved on-site disposals, before license termination.

This issue was identified in SECY-02-0177, along with the planned evaluation that is addressed in this attachment. This attachment examines NRC’s current practice for approving on-site disposals, NRC’s practice for applying the Timeliness Rule to on-site disposals, and considers options for evaluating future on-site disposal requests.

2. ISSUE DESCRIPTIONS AND DESIRED OUTCOME

2.1 Issue

10 CFR 20.2002 does not establish a clear standard for approving on-site disposals, but allows Agency discretion to approve such disposals, on a case-by-case basis, as long as the action remains within the public dose limit of 1 mSv/yr (100 mrem/yr). However, it appears clear, from the LTR “Statement of Consideration,” that on-site disposals were to be reconsidered under the LTR at the time of license termination. In addition, the requirements of the Timeliness Rule in 10 CFR 30.36, 40.42, and 70.38 apply to on-site disposals and warrant assessment. This suggests that at a minimum, the LTR constraint of 0.25 mSv/yr (25 mrem/yr) and ALARA for unrestricted release, should be used for approval of on-site disposals during operation. Similarly, the same constraint should be used for offsite disposals, under 10 CFR 20.2002.

2.2 Desired outcome

Clarify the appropriate standard to use for approving on-site disposals.

3. EVALUATIONS OF RELEVANT INFORMATION

3.1 Current Practice for Approving On-Site Disposals

By its terms, 10 CFR 20.2002 does not establish a specific standard for approving on-site disposal applications. Staff's current practice for approval of on-site disposals is the dose criterion of a "few millirem" This practice is consistent with the following considerations:

- 1) Under 10 CFR 20.2002, NRC could permit on-site disposals of up to 1 mSv/yr (100 mrem/yr), based on the public dose limit provided in 10 CFR 1301(a);
- 2) The "Statement of Considerations" for the LTR, state that disposals will be considered at the time of license termination [i.e., as a contribution to the total dose at the site, which is 0.25 mSv/yr (25 mrem/yr) and ALARA for unrestricted release)]; and,
- 3) 10 CFR 20.2002(d) provides that on-site disposals must be implemented in a manner that provides for doses that are ALARA.

Staff's current practice is a fraction of the upper-limit of 1 mSv/yr (100 mrem/yr), consistent with the LTR "Statement of Considerations" (in that staff believes that when the disposal is considered at the time of license termination, as suggested in the "Statement of Considerations," the contribution of a "few millirem" should not require remediation of the disposals), and supports the ALARA provision of 10 CFR 20.2002.

3.2 Current Practice for Applying the Timeliness Rule to On-Site Disposals

The Timeliness Rule provides requirements for buildings and outdoor areas that have been unused for a period of 24 months at facilities licensed under 10 CFR Parts 30, 40, and 70. The Timeliness Rule does not apply to facilities licensed under 10 CFR Part 50, such as nuclear reactors.

NRC regulations provide that the Timeliness Rule applies to separate outdoor areas where no principal activities are conducted for 24 months. Furthermore, the rule provides that "...storage during which no licensed material is accessed for use or disposal...are not principal activities." Although, NRC's regulations and the "Statement of Considerations" for the Timeliness Rule, do not explicitly address application of the rule to on-site disposals, NRC has consistently interpreted the rule to include on-site disposals. Specifically, staff interprets inactive on-site disposals as areas where no principal activities are occurring. Guidance documents addressing the applicability of the Timeliness Rule to disposals include:

- 1) NRC Administrative Letter 96-05, "Compliance with the Rule of Timeliness in Decommissioning of Material Facilities" (May 11, 1996, and Rev. 1, dated July 14, 1998);
- 2) NRC Information Notice 96-47, "Recordkeeping, Decommissioning Notifications for Disposals of Radioactive Waste by Land Disposal Authorized under Former 10 CFR 20.304, 20.302, and Current 20.2002" (August 19, 1996);

- 3) NRC Regulatory Issue Summary 2000-09, "Standard Review Plan for Licensee Requests to Extend the Time Periods Established for Initiation of Decommissioning Activities" (June 26, 2000);
- 4) NRC NUREG 1757, Vol. 1, "Consolidated NMSS Decommissioning Guidance" (September 2002); and,
- 5) NRC NUREG 1757, Vol. 3, "Consolidated NMSS Decommissioning Guidance-DRAFT" (December, 2002).

4. EVALUATION OF OPTIONS

The staff evaluated the following five options for approving on-site disposals: (1) a dose criterion of 1 mSv/yr (100 mrem/yr); (2) a dose criterion of 0.25 mSv/yr (25 mrem/yr); (3) continuing the current practice of a "few millirem"; (4) limiting approvals to disposals of short-lived radionuclides; and (5) entirely discontinuing the practice of approving on-site disposals. An evaluation of each alternative follows. This evaluation focuses on the balance between the countervailing policy considerations of reducing regulatory burden, and therefore increasing licensee cost savings and flexibility, and staff's current objective of preventing future legacy sites.

4.1 Use a Dose Criterion of 1 mSv/yr (100 mrem/yr) for Approving On-Site Disposals

Under this option, staff would review 10 CFR 20.2002 on-site disposal requests against a dose criterion of 1 mSv/yr (100 mrem/yr).

Pros:

This policy would provide licensees with the most flexibility permissible under the current regulation.

This dose criterion is permissive under 10 CFR 20.2002

Cons:

This option may not further staff's objective of preventing future legacy sites. Since disposals must be considered at the time of license termination, a disposal that meets the 1mSv/yr (100 mrem/yr) dose criterion at the time of disposal, may contribute over 0.25 mSv/yr (25 mrem/yr) to the site-wide dose at the time of license termination. This option could therefore result in sites with on-site disposals that require remediation before unrestricted release can be achieved under the LTR. Similarly, this option could unnecessarily force a restricted release option, which is not the Commission's preferred license termination option. If restricted release is impractical and licensees do not have the funding to perform additional remediation for such disposals, this approach may ultimately lead to the creation of legacy sites. Therefore, staff may want to consider approving requests under this criterion, subject to licensees obtaining additional financial assurance for remediation of the on-site disposal.

Since disposals at material sites are considered under the timeliness rule, an approval of a disposal over 0.25 mSv/yr (25 mrem/yr) may require an alternative schedule request, an exemption from the Timeliness Rule, or remediation within 2 years.

4.2 Use a Dose Criterion of 0.25 mSv/yr (25 mrem/yr) for Approving On-Site Disposals

Under this option, staff would review 10 CFR 20.2002 on-site disposal requests against a dose criterion of 0.25 mSv/yr (25 mrem/yr).

Pros:

This approach is consistent with the criteria for unrestricted release under the LTR, and therefore gives licensees the flexibility to request on-site disposals up to that level.

Cons:

This policy is more restrictive and burdensome on licensees than 1 mSv/yr (100 mrem/yr), which is permissive under 10 CFR 20.2002. However, depending on the economics, there may be a net reduction in burden if it reduces decommissioning cost in the long term.

This option potentially has the same legacy site risks as the 1 mSv/yr (100 mrem/yr) option. The LTR requires that licensees take the dose from on-site disposals into account at the time of license termination. A disposal at 0.25 mSv/yr (25 mrem/yr) could potentially take-up a significant portion, or all, of the allowed dose for a site, forcing extensive remediation in other portions of the site, or remediation of the disposal area. Although factors such as decay, dose-modeling assumptions, and the amount of radioactive material actually buried, relative to the amount requested, may mean that the burial actually contributes far less than 0.25 mSv/yr (25 mrem/yr), the potential for increased remediation costs, and thus potential legacy sites, should be considered.

Unlike the 1 mSv/yr (100 mrem/yr) option, NRC may not be able to account for the potential need for remediation of on-site disposals at the time of license termination by requiring additional financial assurance. Increased financial assurance would be difficult to justify for this option because disposals at 0.25 mSv/yr (25 mrem/yr) already meet NRC's unrestricted release criteria of the LTR.

4.3 Continue Current Practice of a "few millirem" for Approving On-Site Disposals

Under this option, staff would continue the current practice of reviewing 10 CFR 20.2002 on-site disposal requests against a dose criterion of a "few millirem."

Pros:

This option furthers NRC's objective of preventing future legacy sites, in that any disposal approved at this level should not require additional remediation or restricted release, because it would only consume a fraction of the 0.25 mSv/yr (25 mrem/yr) dose allowed for the entire site.

As discussed in Section 2 of this Attachment, this option is consistent with the LTR "Statement of Considerations" and the ALARA provisions of 10 CFR Part 20.

Cons:

This option is more restrictive and burdensome on licensees than 1 mSv/yr (100 mrem/yr), which is permissive under 10 CFR 20.2002.

4.4 Only Approve On-Site Disposal for Short Half-Lived Materials

Under this option, NRC would only approve on-site disposals for short half-lived material. Note that this evaluation is generalized in that staff has not developed the exact guidelines for such approvals (e.g., what radionuclides would be included, what dose would be required at the time of disposal).

Pros:

This option would effectively eliminate the concern over on-site disposals becoming future legacy sites.

Cons:

This option is unnecessarily burdensome for licensees as it is more restrictive than staff's current practice, which effectively addresses the concern over legacy sites.

This option is inconsistent with the current 10 CFR 20.2002 regulation and Commission policy (e.g., this option does not reflect a performance-based approach and drastically limits or eliminates the 10 CFR 20.2002 pathway for most NRC licensees). Although depending on the economics, there may be a net reduction in burden if it reduces the cost of decommissioning in the long term.

4.5 Stop Approving On-Site Disposals

Under this option, NRC would no longer allow on-site disposal.

Pros:

This option would effectively eliminate the concern over on-site disposals becoming future legacy sites.

Cons:

This option is unnecessarily burdensome for licensees since it is more restrictive than staff's current practice, which effectively addresses the concern over legacy sites.

This option is inconsistent with the current 10 CFR 20.2002 regulation and Commission policy (e.g., this option does not reflect a performance-based approach and drastically limits or eliminates the 10 CFR 20.2002 pathway for most NRC licensees). This would require a rulemaking to implement.

5. RECOMMENDATIONS

The recommended options and implementation activities to resolve this issue are provided below.

Continue the current practice of approving on-site disposals with a dose criterion of a “few millirem.” This is consistent with staff’s goal of preventing future legacy sites, and not unnecessarily creating restricted release sites. This option should be implemented with revised guidance and a Regulatory Issue Summary.

Permit burial requests with a dose criterion of 1 mSv/yr (100 mrem/yr), as long as such requests are approved contingent on providing additional financial assurance to cover the cost of decommissioning the burial site for license termination. The additional financial assurance satisfies staff’s concern with preventing future legacy sites, while leaving this option available provides licensees with maximum flexibility under the existing regulation. Note that this issue is addressed in Attachment 7 as an indicator of the need for increased financial assurance.