UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER No. 9272.0-15P

MEMORANDUM

SUBJECT: Interim Final Evaluation of Facilities Currently or Previously Licensed NRC Sites under CERCLA

FROM: Timothy Fields, Jr.
Assistant Administrator

TO: Addressees

PURPOSE

This memorandum addresses the U. S. Environmental Protection Agency (EPA) evaluation of facilities previously or currently licensed by the Nuclear Regulatory Commission (NRC). EPA has increasingly received requests to either 1) conduct response actions under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at previously or currently licensed facilities, or 2) make a determination if a past or proposed NRC decommissioning would meet CERCLA cleanup levels. This memorandum does not address EPA's role under other statutory authorities at NRC facilities, such as corrective action authorities under the Resource Conservation and Recovery Act (RCRA) for hazardous waste practices. The Regional Superfund Office should coordinate with other EPA offices and governmental authorities, including states, as appropriate. EPA expects that the vast majority of facilities decommissioned under NRC authority will be protective of human health and the environment. This memorandum provides guidance to clarify EPA's role under CERCLA at previously or currently licensed NRC-facilities to avoid dual regulation. The procedures in this guidance will facilitate the beneficial reuse of NRC licensed facilities while ensuring the selection of cleanups that are protective of human health and the environment.

This memorandum provides guidance to EPA staff. It also provides guidance to the public and the regulated community on how EPA intends that the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) should be implemented. The guidance is designed to describe EPA's national policy on these issues. The guidance does not, however,

substitute for EPA's statutes or regulations, nor is it a regulation itself. Thus, it cannot impose legally-binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA may change this guidance in the future, as appropriate.

BACKGROUND

Since September 8, 1983, EPA has generally deferred listing on the National Priorities List (NPL) sites that are subject to NRC's licensing authority because NRC's actions are generally believed to be consistent with the CERCLA requirement to protect human health and the environment.[1] However, even with EPA's policy of deferral to NRC, EPA has taken action at formerly or currently licensed NRC sites that posed a threat to human health or the environment. As EPA indicated in the Federal Register notice announcing the policy of deferral to NRC, if EPA "later determines that sites which it has not listed as a matter of policy are not being properly responded to, the Agency will consider listing those sites on the NPL" (see 48 FR 10661). This remains EPA's position.

On July 21, 1997, the NRC promulgated a final rule on "Radiological Criteria for License Termination" (see 62 FR 39058). The NRC rule sets an allowable cleanup level of 25 millirem per year effective dose equivalent (EDE) (equivalent to approximately 5×10^{-4} lifetime cancer risk) as the primary standard with exemptions, allowing cleanup levels of up to 100 millirem per year (mrem/yr) EDE (equivalent to approximately 2×10^{-3} lifetime cancer risk). Also, the NRC rule does not include a separate requirement for protecting groundwater that is a current or potential source of drinking water to the Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act.

Prior to promulgation of the NRC rule, EPA's Administrator Carol M. Browner sent a letter on February 7, 1997, to NRC Chairman Shirley Jackson expressing EPA's concern that the NRC rule would allow the cleanup of sites to levels that are not protective of human health and the environment. In this letter, EPA raised the idea of reconsidering EPA's policy of generally deferring the listing of NRC sites on the NPL.

Subsequent to the NRC rule, EPA issued guidance entitled "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" (OSWER No. 9200.4-18, August 22, 1997). This 1997 radiation guidance provided clarification for establishing protective cleanup levels for radioactive contamination at CERCLA sites. In it, EPA recommended that the NRC decommissioning requirements (e.g., 25, 100 mrem/yr EDE dose limits) in the NRC rule

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[1]EPA has the authority to choose not to respond to certain types of releases under CERCLA because existing regulatory or other authority under other Federal statutes provides for an appropriate response. As a policy matter, EPA has generally chosen not to list releases of source, byproduct, or special nuclear material that is currently licensed by NRC. This general deferral policy never applied to facilities where NRC has terminated the license, or the current license is issued by a State pursuant to a delegation of authority from the NRC pursuant to section 274 of the Atomic Energy Act (42 U.S.C. 2021).

should generally not be used to establish cleanup levels under CERCLA, even when these regulations are ARARs. Concurrently, EPA issued guidance entitled "Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA" (OSWER No. 9200.4-23, August 22, 1997). This 1997 ARARs policy guidance explained that CERCLA cleanups may be more stringent than an ARAR, where application of the ARAR would not be protective of human health or the environment.

Previously, NRC and EPA have transmitted to each other draft Memorandums of Understanding (MOUs) concerning how the two agencies might coordinate when NRC planned to decommission facilities. A joint MOU has not been finalized. For this reason, this memorandum should be used by the Regions as the Agency's guidance for these situations instead of either EPA's or NRC's draft MOU. **If EPA finalizes an MOU with NRC in the future, EPA will revise this memorandum as necessary to reflect the coordination procedures agreed upon by NRC and EPA.**

OBJECTIVE

This guidance provides general considerations for Regions when evaluating currently or previously NRC licensed facilities, either when Regions are considering conducting CERCLA response actions (removal, remedial, or NPL listing), or determining if proposed or previous NRC decommissionings will be/are protective under CERCLA. EPA expects to use CERCLA cleanup levels as the measure for protectiveness in either case. The discussion that follows outlines considerations to aid in these discussions.

IMPLEMENTATION

The following subsections will clarify the considerations when the Agency evaluates NRC facilities to determine either the attainment of CERCLA cleanup levels of NRC's decommissioning or the need for EPA response action, either removal or remedial if warranted, or listing on the NPL.

Protectiveness Evaluation of NRC Decommissionings

EPA should consider the following factors when conducting a CERCLA protectiveness evaluation of an NRC licensed or decommissioned facility that has been requested by a stakeholder. The decision as to whether such an evaluation is appropriate will generally be determined by the Region in which the facility is located.

When EPA is conducting an evaluation to determine if NRC's proposed/planned/previous decommissioning was/is protective under CERCLA, EPA expects to use CERCLA cleanup levels as the measure of protectiveness. CERCLA cleanup levels include, but are not limited to, the risk range (generally 10^{-4} to 10^{-6} cancer risk summed for all contaminants, both radiological

and chemical), hazard index (HI) (generally a HI of less than 1 for noncarcinogens with the same toxic endpoint or mechanism of action), compliance with applicable or relevant and appropriate requirements (ARARs), and protection of the environment. This includes attainment of MCLs for actual and potential drinking water aquifers throughout the plume.

Protectiveness determinations include evaluation of responses for contaminants addressed under the NRC license and decommissioning as well as contamination not being addressed by NRC. This may include: non-NRC licensed contaminants that NRC is not addressing (e.g., chemicals, technologically enhanced naturally occurring radiological materials[2], etc.) or areas where NRC is not addressing the contamination (e.g., contamination outside a facility's boundary). In making a determination, the Regional Superfund program should coordinate with other EPA offices (e.g., the RCRA office) and government entities, including the states, as appropriate, regarding whether the NRC's facility will meet the CERCLA cleanup levels for all contaminants.

While a protectiveness determination can best be made at the completion of the NRC decommissioning, EPA should be able to make a preliminary judgement at any time in the process where sufficient information is available. In discussions with the public, NRC and NRC licensees, EPA should provide a general overview of CERCLA cleanup levels (including the need for public involvement) to aid groups in their dialogue. EPA should then evaluate the site-specific information available including the proposed or actual cleanup concentrations and consider whether the level being proposed/planned or has been achieved, for all contaminants, will meet CERCLA cleanup levels. During its evaluation, the following information should be considered by EPA:

- EPA should evaluate NRC decommissionings based on the NRC licensee's proposed, planned, or actual cleanup levels, not the dose limits (25, 100 mrem/yr EDE) in the NRC decommissioning rule. As noted below, the evaluation of NRC's cleanup level needs to consider available site-specific information such as land and ground water use, and the levels of contaminants not being addressed by NRC. EPA's evaluation should be conducted using the EPA's CERCLA policies [e.g., NCP, Office of Solid Waste and Emergency Response (OSWER) directives] regarding what cleanup level is acceptable, rather than NRC's policies.

- EPA should not evaluate NRC decommissionings using all of the procedures that EPA would use if it were conducting a CERCLA response action. The NRC decommissioning should not be judged using EPA's CERCLA process [e.g., establishing preliminary remediation goals (PRGs) at either 1×10^{-6} cancer risk or ARAR levels, then modifying

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[2]Until recently, technologically enhanced naturally occurring radioactive material (TENORM) was previously referred to in EPA documents simply as naturally occurring radioactive material (NORM). "Technologically enhanced" was added to distinguish clearly between radionuclides as they occur naturally and radionuclides that human activity has concentrated or exposed.

those PRGs based on the balancing of the nine criteria used for remedy selection (see 55 FR 8717-8718)]. An NRC decommissioning should be evaluated in terms of whether it meets the risk range and attains ARARs.

- EPA should evaluate whether the cleanup will achieve the CERCLA risk level (generally no greater than the 10^{-4} to 10^{-6} cancer risk range) for reasonably anticipated land uses, ARARs, and whether ground waters will be returned to beneficial reuse (as identified by the State designation or Federal Criteria for determining groundwater use) throughout the plume. For non-carcinogens, a Hazard Index of less than one should generally be the measure of protectiveness.

  -- For an overview of EPA CERCLA policy regarding the risk range, see guidance entitled "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" (OSWER No. 9355.0-30, April 22, 1999).

- Risk assessments, both for radiological and nonradiological (chemical) carcinogens, conducted by EPA to determine if the NRC decommissioning is/will attain CERCLA cleanup levels, should be conducted using slope factors, and expressed as a risk number, such as # x $10^{-\#}$ for purposes of determining whether the cleanup is within the CERCLA risk range. Risk assessments should also be performed on a site-specific basis using EPA guidance to the extent possible.

  -- For an overview of EPA CERCLA risk assessment policy at radioactively contaminated sites, see guidance entitled "Radiation Risk Assessment At CERCLA Sites: Q & A" (OSWER No. 9200.4-31P, December 1999).

  -- The Region should use CERCLA cleanup levels (generally 10^{-4} to 10^{-6} estimated with slope factors, and ARARs) for determining cleanup levels at CERCLA sites. Under certain circumstances for other radiation control programs developed by EPA, a level of 15 mrem/yr per year is generally considered protective. However, under CERCLA dose assessments are generally conducted only where necessary to demonstrate ARAR compliance (see memorandum from Stephen D. Luftig titled "Distribution of OSWER Radiation Risk Assessment Q & A's Final Guidance" December 17, 1999, pp. 2-3).

- Compliance with standards that EPA would likely consider potential ARARs (especially MCLs, but also including others such as State laws) should be used in evaluating the attainment of CERCLA cleanup levels, to the extent those potential ARARs can be readily identified. It should be noted that compliance with the dose limits in the NRC rule should generally not be used to determine if an NRC cleanup attains, or will attain CERCLA cleanup levels.

-- Information regarding some Federal standards that are likely ARARs for radioactively contaminated sites is included in Attachment A of "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" (OSWER Directive 9200.4-18 August 22, 1997).

-- Guidance regarding the use of subsurface soil cleanup standards in 40 CFR Part 192 as ARARs to establish cleanup levels for radium-and thorium-contaminated sites is contained in guidance entitled "Use of Soil Cleanup Criteria for 40 CFR Part 192 as Remediation Goals for CERCLA Sites" (OSWER Directive 9200.4-25 February 12, 1998).

-- Guidance on making decisions concerning ground water protection is contained in "Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites" (OSWER Directive 9355.7-04 October 1996).

- Risk assessment numbers should be provided for both: (1) the land use for which NRC released the site, and; (2) the current and reasonably anticipated land use. NRC will usually release facilities for unrestricted land use after license termination, although the reasonably anticipated land use may be industrial.

- Potential time frame for surface and ground water use and the use of alternative water supplies should be used to provide an assessment as to whether the remedy will be protective in the near term and whether the ground water resource will be protected for future generations.

- When presenting results of EPA's analysis of NRC's proposed/planned decommissioning cleanup level, the Region may want to caveat the results by noting that it is likely that the cleanup level the NRC licensee achieves may be significantly lower than the proposed/planned cleanup level (e.g., the *planned* level of residual concentrations after cleanup versus the *actual* level of residual concentrations achieved by the cleanup.)

- When presenting results of EPA's analysis of a previous NRC decommissioning, the Region may want to also include some discussion of NRC's proposed/planned cleanup level.

- When presenting results of EPA's analysis, the Region may want to caveat the results to the extent the analysis is based on the data provided by NRC, and was conducted using current EPA guidance and ARARs. The Region may also want to provide some discussion of NRC's sampling and site characterization methodology if it raises significant uncertainty in EPA's assessment.

Generally, for sites at which a CERCLA response action is not being conducted, EPA's Superfund program generally does not expect to be involved with the specifics of how a cleanup action will proceed. However, the NRC licensee, the community, or the State, may find it useful to consult EPA policies and practices relating to CERCLA response actions. In this regard, EPA may provide suggestions or Agency guidance to help in the cleanup effort. If the Region is suggesting some practice that the NRC licensee should follow that is not either an NCP requirement or a Superfund policy, this should be made clear as well as the rationale for making this suggestion. For example, the Region may offer suggestions regarding Regional practices [e.g., public participation procedures beyond those required in the NCP, or the use of non-Superfund guidance such as the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)].

Evaluating Need for CERCLA Response Action

EPA receives requests to review a planned or completed cleanup conducted under other authorities, including NRC authority, to determine whether it warrants a response action under CERCLA removal or remediation authority. EPA may and does take removal and remediation actions at sites where there is an active NRC license. This is appropriate in situations where the NRC license does not apply, and may include actions involving contaminants not addressed by NRC (e.g., chemicals, technologically enhanced naturally occurring radiological materials, contamination outside the facility's boundary, or cases where the licensee is in violation of the license). Response actions under other EPA authorities (e.g., RCRA) may also be appropriate and should be coordinated at the Regional and State level.

As a matter of general course, we expect that most NRC decommissioning will result in protective cleanups and that a response under CERCLA authority will not be required. In those limited situations where this is not the case, we expect to consider listing on the NPL those sites potentially warranting remedial response under CERCLA after the completion of the NRC decommissioning and termination of the license. Evaluations of sites for potential listing on the NPL should be based on factors identified in the NCP, 40 CFR § 300.425(c), and should generally consider:

- NRC sites should be considered for listing on the NPL consistent with other sites, since the Hazard Ranking System (HRS) clearly states that radioactive substances are hazardous substances under CERCLA and should be considered for HRS scoring (see final rule for the HRS final rule, 55 FR 51663 December 14, 1990).

  -- States conduct Preliminary Assessment/Site Investigation (PA/SI) for listing.

  -- Listing determination would be subject to prior notice and comment. As is always the case, the public may petition EPA to list a site on the NPL, and EPA will evaluate those requests.

- Both radiological and chemical contaminants should be analyzed. NRC generally does not include chemical contaminants in their assessments and response activities. HRS scoring considers both radioactive and chemical contamination.

EPA may also take removal action at an NRC decommissioned or decommissioning site as appropriate. Decisions to take such action should be made in a manner consistent with other removal actions. In particular, the site-specific nature of the situation, and the ability of the existing authorities to address the situation in a protective and timely manner, should be considered.

Summary

EPA is committed to ensuring that sites are cleaned up in a manner that protects the public and the environment. EPA believes that working together with all the involved stakeholders can ensure that this happens. In a limited number of cases EPA may need to address contamination at a former or currently NRC licensed facility using CERCLA authority. In the vast majority of cases, EPA expects that these sites will be cleaned up adequately using other authorities and CERCLA guidance may be useful for those stakeholders involved in decisions to help judge the protectiveness of the remedies. While we expect our resources are most appropriately directed towards CERCLA response actions (removal or remedial) to ensure that those sites within EPA's jurisdiction are cleaned up to protective levels to facilitate their return to beneficial use, EPA will provide information with regard to CERCLA requirements and guidance as needed. EPA believes that this may further limit the need for additional response actions under CERCLA authority.

Coordination Policy

When considering requests for listing a former or current NRC licensed facility, Regions should contact Robert Myers of the Office of Emergency and Remedial Response (OERR). When considering requests to evaluate the protectiveness of a previous or proposed NRC decommissioning, Regions should contact Stuart Walker of OERR. When considering a removal action at a former or currently NRC licensed facility, Regions should contact Craig Beasley of OERR.

FURTHER INFORMATION

The subject matter specialists for this directive are Stuart Walker and Robin M. Anderson of OERR. General questions about this directive should be directed to 1-800-424-9346.

Addressees:

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