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OFFICE OF STATE AND LOCAL AIR POLLUTION CONTROL
OFFICE OF AIR AND RADIATION



Eric S. Beckjord, Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
NL-007
Washington, DC 20555-0001

Dear Mr. Beckjord:

Thank you for your letter of February 2 which transmitted a copy of the Nuclear Regulatory Commission (NRC) "staff draft" rule on radiological criteria for decommissioning. We appreciate the opportunity to review and provide comments on the draft rule.

Enclosure 1 of this letter provides the Environmental Protection Agency (EPA) comments on the draft proposed rule and the draft Generic Environmental Impact Statement (GEIS), Volumes I and II. The comments have been organized into the following categories: (1) Draft Proposed Rule - Risk Limit Comments, (2) Draft Proposed Rule - Major Comments, (3) Draft GEIS - Major Comments and (4) Supplemental comments on draft rule and GEIS.

I would also like to thank you and your staff for the constructive cooperation that has occurred throughout the development of both the decommissioning criteria and the proposed radiation site cleanup regulation. It is critical that both our offices continue to exchange information relevant to establishing regulations for the remediation of sites contaminated with radioactive material. I am confident that this cooperation will result in the promulgation of final rules that are consistent and protective of human health and the environment.

If you have any questions or would like to discuss the comments in more detail, please call Eugene Durman, Deputy Director, Office of Radiation and Indoor Air, at (202) 233-9340.

Sincerely,

Margo T. Oge
Margo T. Oge
Director, Office of Radiation
and Indoor Air

Enclosure

cc: Eugene Durman (6603J)

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ENCLOSURE 1**DRAFT PROPOSED RULE - RISK LIMIT COMMENTS**

The risk limit approach presented in the draft rule is a commendable step towards establishing radiological criteria for the release of NRC-licensed sites. This approach would establish a limit of 15 mrem per year above which the risk to the public from decommissioned sites is deemed unacceptable. This upper limit would be augmented by criteria to reduce exposures to levels below the limit to the extent practicable based on the As Low As Reasonably Achievable (ALARA) principle. We offer several suggestions that may clarify the selection of the risk limit as well as several suggested refinements to minimize any potential misunderstandings that may arise in its application. Specifically:

1. **100 mrem Cap:** We cannot support the use of 100 mrem per year as the allowable dose from a single site when land use restrictions fail. Some fraction of 100 mrem per year should be used because the 100 mrem per year value should be reserved as the upper bound on doses to an individual from all sources combined.
2. **Below Regulatory Concern:** The lower risk limit of 3 mrem per year may be misconstrued as a level delineating "below regulatory concern" unless it is clearly defined as simply a default value below which ALARA is judged to be generically satisfied. Furthermore, misunderstandings may occur because the value is not consistent with other Federal Agency programs which define de minimis levels (e.g., Superfund soil screening level initiative).
3. **ALARA:** A more sufficient definition of ALARA should be provided. Also, there is a potential hazard in using the ALARA principle that should be acknowledged in the preamble, i.e., the use of ALARA allows for broad discretion in site remediation activities which may increase the potential for environmental inequities.
4. **Groundwater:** The groundwater pathway needs to be addressed separately in the proposed rule. The rule should state that remediation of contaminated groundwater should meet EPA's requirements as specified under the Safe Drinking Water Act (see 40 CFR Parts 141 and 142) and as implemented under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
5. **Recycling/Reuse:** The draft rule does not mention the implications of the decommissioning standard for the recycling or reuse of structural materials salvaged from

decommissioned sites. Although a risk limit of 15 mrem per year may be achievable in a structure, recycle or reuse of selected building elements may result in exposures to individuals which may exceed this limit. The proposed rule lacks any prohibitions against either the immediate or eventual recycling or reuse of structural elements that exceed the risk limit. EPA believes this is a significant omission that should be corrected. The rule should be strengthened by explicitly outlining the criteria governing both the immediate and eventual recycling/reuse of structural elements from a decommissioned site. Such criteria should address the issue of disclosure to future users of the risks associated with the recycling/reuse of structural elements.

6. **Superfund Risk Levels:** NRC may have misunderstood EPA's policy of determining the appropriate remediation levels at Superfund sites. On page 20 of the draft proposed rule, NRC states that its proposed limit "...is well below the 9×10^{-4} upper level of lifetime risk used by EPA for Superfund." In fact, the upper level of risk for remediation under Superfund is approximately 10^{-4} . Remediation should achieve risk levels between 10^{-4} and 10^{-5} , although a 1991 EPA Office of Solid Waste and Emergency Response (OSWER) directive stated that "in certain cases EPA may consider risk estimates slightly greater than 1×10^{-4} to be protective."¹

DRAFT PROPOSED RULE - MAJOR COMMENTS

7. The draft proposed rule does not adequately address EPA's role in determining whether the decommissioning criteria provide sufficient protection of public health and the environment. We suggest adding the following language to the Background section (p. 6) of the preamble:

"Under the Atomic Energy Act (AEA) and Reorganization Plan No. 3 of 1970, EPA has the statutory responsibility to establish generally applicable standards for protection of the public and the environment from radioactive material (i.e., outside NRC licensee site boundaries). The NRC is responsible for ensuring, through licensing requirements and other restrictions, that activities at facilities under NRC

¹ This is based on the following statement from OSWER directive 9355.0-30: "Where cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10^{-4} , and the non-carcinogenic hazard quotient is less than 1, action is generally not warranted unless there are adverse environmental impacts." The directive adds: "The upper boundary of the risk range is not a discrete line at 1×10^{-4} , although EPA generally uses 1×10^{-4} in making risk management decisions. A specific risk estimate around 10^{-4} may be considered acceptable if justified based on site-specific conditions. Therefore, in certain cases EPA may consider risk estimates slightly greater than 1×10^{-4} to be protective."

jurisdiction do not lead to radiation doses outside the facility boundaries in exceedance of EPA's generally applicable standards. Further, releasing a facility from NRC oversight will eliminate the temporal boundaries and subject the location directly to EPA's generally applicable standards. For this reason, NRC has been coordinating closely with EPA in the development of the proposed decommissioning standards.

A Memorandum of Understanding (MOU) signed by NRC and EPA in March 1992 provides a basic framework within which NRC and EPA will endeavor to resolve issues of concern relating to the regulation of radionuclides in the environment. Under the guidelines of the MOU, EPA will make a determination as to whether the proposed decommissioning standards provide a sufficient level of protection for public health and safety and the environment. If EPA concludes that the NRC standards are sufficient, EPA will publish its findings in the Federal Register for notice and comment and propose that NRC licensees be exempt from the standards developed by EPA for non-NRC licensed facilities."

8. Some numerical estimates of licensee sites that could require cleanup are absent (p. 7-8), i.e., source manufacturers, radiopharmaceuticals, and radioactive ore processors. This is useful information that should be included in the background section.
9. In addition to mentioning ICRP and NCRP on page 16, the proposal should also reference the Federal Radiation Protection Guidance for Exposure of the General Public.
10. On what basis would NRC be able to require additional remediation of a former licensee's site in the future, following termination of a license (p. 23)?
11. The draft rule states that "if disposal capacity were to become temporarily limited, on-site storage and containment of wastes may be necessary..." (p. 34-35). The disposal criteria and the site selection criteria that would apply to such situations should be discussed here or included in a guidance document.
12. We recommend that a more detailed discussion on institutional controls be included in a regulatory guidance document. Suggested topics to address include different options and effectiveness of institutional controls, and implementation and enforcement considerations. The guidance document should also include more information on the use of a "third party" to insure the maintenance of institutional controls (p. 48). The following questions are provided for consideration: What are the qualifications of an acceptable

third party; How can its managerial and financial integrity be assured; Who is responsible for instituting any corrective measures (including instituting and paying for any necessary legal action)?

13. The statement that the Commission would not normally consider terminating a license when the dose could exceed 100 mrem per year does not provide adequate assurance that either EPA standards or Federal radiation protection guidance would be satisfied under the proposed rule. This concern should be addressed in the preamble.
14. The rule proposes, under some circumstances, to rely on licensee-imposed restrictions. How can this be if the license has been terminated (p. 63)?
15. Subpart A, 20.1003 Definitions: Background radiation as currently defined could be interpreted to include radon from uranium mill tailings and other licensed material. The definition should be revised to read "... does not include radiation ~~including that from radon~~ from source, ..."

DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT - MAJOR COMMENTS

The draft GEIS is impressive in its scope and analysis. The discussion on the issue of natural background levels of radiation, for example, is very thorough and comprehensive. We do have a number of concerns and questions about the GEIS, however, which are briefly summarized below.

16. **Regulatory Alternatives:** The five regulatory alternatives considered by NRC are carefully described in Chapter 3 of the draft GEIS. The quantitative analysis that follows, however, examines the costs and benefits associated with nine discrete residual dose levels ranging from 0.03 to 100 mrem per year and not the regulatory alternatives. The relationship between the regulatory alternatives and the quantitative analysis is treated in only a cursory fashion in Chapter 7.
17. **Assumptions and Models:** Our review of the draft GEIS would have been aided by a more complete discussion of the assumptions and models used to analyze the costs and benefits of the residual dose levels examined. It is unclear, for example, which pathway/risk models were used. Greater illumination about key assumptions and decision rules underlying the quantitative models would also be helpful. The modeling approach for reference sites assumed that contaminated structures would be reduced to rubble or surface cleaned. Presentation of the assumptions guiding these decisions would assist in our evaluation of the

modeling approach. In addition, a more detailed analysis and discussion of groundwater contamination should be provided in the GEIS.

18. **Exposure Assumptions:** The exposure assumptions specified in EPA OSWER Directive 9285.6-03 (Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual) should be examined for compatibility. This guidance is being applied in risk assessments conducted at Superfund radiation site cleanups. Specifically, the following primary exposure assumptions influencing risk or dose calculations should be reviewed:
- a) **Target receptor:** Some reviewers may misinterpret the term 'critical group' to mean a sensitive population group such as children and/or pregnant women. The definition of critical group (in the GEIS and proposed rule) should clearly state that the choice of such populations is based on dose, not risk. For example, a child may receive a lower dose than an adult, but have a higher health risk. The adult, however, would be considered the target receptor since the adult received the higher dose.
 - b) **Lifetime exposure period:** Lifetime exposures other than 70 years should also be assessed. The Superfund program recommends a 30-year lifetime exposure as a more appropriate estimate of health impacts.
 - c) **Health effect endpoint:** The number of fatal and non-fatal cancers (i.e., total cancer incidence) should be assessed and not simply fatal cancers as used in the draft GEIS. An assessment of genetic effects should also be included.

SUPPLEMENTAL COMMENTS AND SUGGESTIONS - DRAFT PROPOSED RULE

19. We surmised that the term "total effective dose equivalent" used in the proposed rule is commensurate with the sum of effective dose from external radiation and committed effective dose equivalent from internal radiation. A clear definition of total effective dose equivalent would eliminate any ambiguities surrounding its interpretation.
20. The proposed rule uses the terminology "which is indistinguishable from background." While this term is helpful in the explanatory portions of the preamble, it may give rise to misinterpretation if used in the regulation. Demonstrating that radiation levels are indistinguishable from background is complex and controversial. As an

alternative, EPA recommends use of the term "in excess of natural background levels."

21. The proposed rule states that "Institutional controls would have to be enforceable by a responsible government entity or in a court of law..." (page 47). More discussion on this would be helpful in the preamble. We raise the following questions for your consideration: What is a 'responsible government entity'? Should a resident be required to enforce a control through the court? Who would be the defendant? Who would be liable?
22. Several examples of institutional controls are mentioned on page 63. Another control that should be considered as a supplement, but not a sole basis for control, is notice to future residents which could include notice of the type of contamination, residual levels, and assumptions on which the residual levels were based.
23. We applaud the provisions for public participation when land use restrictions are proposed for a site. We encourage NRC to further strengthen the provisions of the proposed rule to promote public participation through Site Specific Advisory Boards (SSAB) and other public participation mechanisms for all sites, regardless of whether land use restrictions are proposed. Addressing the following questions would enhance this section: Will supplementary studies be funded? How will stacking of the panel by the licensee be avoided? How will groups not directly represented on the SSAB be involved?

In addition, the following mechanisms are offered for consideration to further enhance public participation activities: publish notices in the Federal Register at least 30 days in advance; publish local newspaper notices for 7 consecutive days; mail notices to residents within half a mile of site to be decommissioned; and setting SSAB meeting times which are convenient for working members.

24. The draft rule does not appear to address the special concerns of the environmental justice community. Given the recently released Executive Order on Environmental Justice (E.O. 12898, February 11, 1994), an approach to the issue seems to be essential.
25. We recommend that the extent to which the proposed rule applies to NORM and NARM wastes be clarified.

SUPPLEMENTAL COMMENTS AND SUGGESTIONS - DRAFT GEIS

26. The consideration of impacts that do not lend themselves to quantification, such as ecological effects, could be strengthened considerably. The potential water resource and air impacts, in particular, deserve more detailed consideration and documentation in the GEIS.
27. NRC is to be commended for its careful analysis of the planned disposal capacity presented in Appendix G. This analysis could be further enhanced by consideration of the short term impacts of potential lags in the development and operation of regional compact disposal facilities. In addition, the health and environmental impacts caused by changes in disposal of decommissioning waste should be considered.
28. We commend the careful consideration given to the impacts of the proposed regulation on remediation workers. EPA strongly supports the evaluation of worker impacts in the regulation development process. However, the GEIS should acknowledge the debate surrounding the practice of simply adding together the general population health impacts and remediation worker health impacts to derive the total health impacts of the proposed rule.
29. Greater detail on the distribution of contaminants within soils and on the models and modeling assumptions used to estimate these impacts is necessary to fully evaluate this analysis in Appendix C.
30. Appendix D provides constructive information about termination survey considerations. However, this discussion should include additional quantitative detail on the costing process. Details of interest include the number of samples as a function of contaminated area, volume, and residual dose level, field crew size, field sampling resource requirements in terms of hours per sample, unit labor costs, and unit analytical costs.