



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

AUG - 3 1999

Jill Lipoti, Ph.D.
Assistant Director
Division of Environmental Safety,
Health and Analytical Programs
Radiation Protection Programs
NJ Department of Environmental Protection
P.O. Box 415
Trenton, NJ 08625-0415

Dear Dr. Lipoti:

This is in response to your letter of July 1, 1999, to the Regional Administrator requesting comments on New Jersey's proposed rule N.J.A.C. 7:28-12, Soil Remediation Standards for Radioactive Materials. Additionally, this also responds to your letter to Steve Page, Director of the Office of Radiation and Indoor Air, on the same matter. Steve has asked that his staff's comments be included herein, and they are.

As you are aware, the U.S. Environmental Protection Agency (EPA) has worked with the Department of Environmental Protection (DEP) on many New Jersey sites contaminated with radioactive materials. We support your efforts to develop clear standards to assist persons responsible for planning and conducting site remediations. However, EPA is concerned about the dilution strategy allowed in the proposed rule. EPA believes that if this dilution strategy was removed and several additions/clarifications detailed below were made (e.g., inclusion of coal ash used for land fill cover, protection of uncontaminated groundwater, periodic review of restricted land uses and corrective actions when controls failed), that the proposed rule's provisions on radiation dose, funding post-remedial engineering/institutional controls, and notification on change in land use would ensure future occupants of remediated sites continue to be protected. The DEP's incorporation of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) approach for designing and conducting investigation, remediation, and final survey will provide responsible parties and regulatory agencies with a clear record of the work done and the decisions made at these sites. Following are specific comments provided in the format requested in the NJ Register publication for Docket Number 11-99-06/697, Proposal Number PRN 1999-224.

12.2(b)2: COMMENT: Recent EPA modeling efforts indicate that coal ash as a land fill cover may result in radiation doses that exceed EPA acceptable risk ranges for radionuclides as well as the proposed rule's standards. Consequently, the coal ash exemption in section 7:28-12.2(b)2iii should be removed from the rule. (EPA)

12.2(a)1 COMMENT: The proposed rule does not take into account material whose radioactive concentration has not been changed by physical or chemical processes, but whose exposure pathway to humans and the environment has been enhanced by human activity. A number of naturally occurring radioactive materials would effectively be exempt from coverage by this rule if this section is not revised. (EPA)

12.3 COMMENT: The definition of "Enhanced" in the proposed rule only addresses increased radionuclide concentrations. The proposed rule should be applicable to radionuclides whose concentration and/or radiation pathway to people and the environment has been enhanced by any human activity, including activities such as relocation of material already at high concentration. (EPA)

12.5(c) COMMENT: The EPA, Nuclear Regulatory Commission, the Departments of Energy and Defense, and other federal agencies are moving away from prescribing analytical methods to a performance based approach for method selection. This approach will assure that laboratory analytical data meet the specific project/program needs and requirements. As such the use of analytical methods in reference 2 and 3 or in equivalent documents should be based on the measurement quality objectives for the project. (EPA)

12.8(a)1 COMMENT: OSWER Directive 9200.4-18 "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" did not establish 15 mrem/year as "the acceptable annual dose that will meet the CERCLA risk range." Rather this guidance reaffirms that "cleanups of radionuclides are governed by the risk range for all carcinogens (radiological and nonradiological) established in the NCP when ARARs are not available or sufficiently protective." Thus, cleanup of sites contaminated with radionuclides should achieve risk levels in the 10^{-4} to 10^{-6} risk range. Where a dose assessment is conducted at the site, the guidance states that "15 mrem/year effective dose equivalent should generally be the maximum dose limit for humans." The preface section in the proposed rule, Comparison to EPA Regulations and Guidance Documents, should clarify the relationship between the CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) risk range (10^{-4} to 10^{-6}) and the proposed DEP dose standard, as well as compare the proposed rule with the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). (EPA)

12.8(a)2, 12.10(a)2, and 3(b) COMMENT: Clarify whether the background concentration is for outdoor or indoor radon. If the background is for indoor radon, there may be situations where the structure will exceed the level EPA recommends citizens take action to reduce radon risk. Because reasonable radon mitigation technology exists, the proposed rule should limit radon (including background) to four pCi/L, consistent with EPA guidance and New Jersey's indoor radon program, as well as require radon-resistant techniques for new construction. (EPA)

12.8(a)3 COMMENT: Clarify that groundwater that is currently not contaminated above New Jersey Groundwater Quality Standards would be protected against a future exceeding of groundwater standards. In addition, the preface should discuss in more detail the pathways evaluated in developing the soil remediation standards to assure that air (in addition to radon) and water pathways (surface and groundwater) were adequately considered. (EPA)

12.9 COMMENT: There is a typographical error for Ac227 USS2 VE1 in Table 3A. The value should be "22" not "122". (EPA)

12.9 COMMENT: The Technical Document should explain in more detail the back calculations referred to by the asterisks in Tables 4A, 4B, 5A and 5B, and Appendix B (EPA)

12.9 COMMENT: Does the phrase "Pre-Mixing Values" in the titles for Tables 4A, 4B, 5A and 5B refer to the required depth of uncontaminated soil layer for mixing or to the allowed incremental concentrations? Does "vertical extent" in these tables mean the same as the definition in 12.3? (EPA)

12.9(a)3. COMMENT: New Jersey may wish to allow other methods, with its approval, for determining natural background radionuclide concentrations other than those presented in MARSSIM by adding the phrase "or equivalents as approved by the Department." (EPA)

12.9(b)1 COMMENT: Mixing, blending, and dilution of contaminated soils with uncontaminated soils in order to achieve remedial goals is inconsistent with Section 121(b)(1) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLA requires that "remedial actions in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants is a principal element, are to be preferred over remedial actions not involving such treatment." [Mixing results in a larger volume of soil contaminated with lesser concentrations of contaminants which is clearly not the intent of CERCLA. Increasing the volume of soil with contamination may increase the number of persons exposed to radiation contamination. In addition, New Jersey's proposed mixing strategy seems inconsistent with how it addresses chemical contamination. Remedial actions that require dilution as the selected remedy would not be supported by EPA. (EPA)]

12.10(e) COMMENT: EPA does not support the use of a 100 mrem/year effective dose equivalent in the event of a failure of institutional or engineering controls, as a substitute for periodic reviews and a requirement for the reestablishment of the controls. The 100 mrem annual dose would result in risks to the affected population in excess of the remedial risk range of 10^{-4} to 10^{-6} . Although section 12.11 of the proposed rule requires implementing all necessary actions to ensure maintaining such controls, the rule should require corrective actions when institutional or engineering controls fail. In addition, for sites not remediated to the unrestricted use standard in section 12.9, the rule should require periodic review (such as five year reviews required under Section 121(c) of CERCLA) to ensure the site with institutional or engineering controls continues to meet the dose, groundwater, and radon standards in section 12.8. (EPA)

We appreciate the opportunity to comment on your proposed rule. If you need additional information, please contact Paul A. Giardina, Chief, Radiation & Indoor Air Branch, of my staff.

Sincerely,



Kathleen C. Callahan
Director
Division of Environmental
Planning and Protection

cc: S. Page, Director, Office of Radiation and Indoor Air
L. Reed, Deputy Director, Office of Emergency and Remedial Response
L. Weinstock, Director, Radiation Protection Programs
R. Caspe, Director, Emergency and Remedial Response Division
P. Giardina, Chief, Radiation and Indoor Air Branch



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

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

SEP 20 2002

Steve Collins
Assistant Manager
Department of Nuclear Safety
1035 Outer Park Drive
Springfield, IL 62704

Dear Mr. Collins,

Thank you for the opportunity to review the July 2002 draft of the Conference of Radiation Control Program Directors (CRCPD) draft model state regulation **Part N – Regulation and Licensing of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)**. The U.S. Environmental Protection Agency (EPA) commented on three earlier drafts of this model regulation. Copies of all three letters from the Office of Solid Waste and Emergency Response are enclosed (Timothy Fields, Jr., to Ray Paris, July 25, 1997; Timothy Fields, Jr., and Robert Perciasepe to Charles Hardin, April 19, 1999; and Bruce Means to Patricia Gorman, April 23, 2001). As requested in an email sent July 12, 2002, by Bruce Hirschler distributing the draft Part N, this letter will not repeat comments previously made in previous letters sent by OSWER. Our comments on this current draft include the following.

Section N.3 includes a definition for “reasonably maximally exposed individual.” If CRCPD is trying to capture the concept of “reasonable maximum exposure scenario” as used by EPA’s Superfund program, we would suggest using the Superfund description of “... it is a product of factors, such as concentration and exposure frequency and duration, that are an appropriate mix of values that reflect averages and 95th percentile distribution.” (See 55 Federal Register notice, page 8710. March 8, 1990). The input parameters used for the RME scenario for radioactively contaminated sites may be found in EPA’s Preliminary Remediation Goals for Radionuclides electronic calculator, which may be found at <http://epa-prgs.ornl.gov/radionuclides/>.

Section N.7.b includes a criterion of 25 millirem per year (mrem/yr) for release of a site for unrestricted use. This is similar to the 25 mrem/yr primary standard that is contained in CRCPD’s Part O - Decommissioning model standard. Since our concerns with this N.7.b standard are similar, I will attach EPA’s comments on the Part O standard (see attached letter from Timothy Fields, Jr., and Robert Perciasepe to Charles Hardin, July 7, 2000).


While Section N.9 states “purposeful dilution to render TENORM exempt shall not be performed without prior Agency approval,” section N.8.c seems to encourage dilution by stating “the criteria in N.5 [dose limit to the public of 100 mrem/yr] shall be used by the Agency to

determine whether or not to approve such a request.” This could be interpreted that CRCPD is encouraging dilution of TENORM and allowing exposure of the public (e.g., by land spreading) to any dose under 100 mrem/yr. We are assuming that this was not CRCPD’s intent. Mixing, blending, and dilution of contaminated soils with uncontaminated soils in order to achieve remedial goals is inconsistent with the objectives of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

In the 2002 *Rationale for Revisions* document, in the third item for future consideration, CRCPD asks EPA to “identify for SR-5 situations in which TENORM contamination of groundwater occurred that was not amenable to regulatory intervention under existing laws.” As EPA mentioned in previous comments, groundwater TENORM contamination is already being addressed at several sites under CERCLA. Although CERCLA may be able to address other future instances of TENORM contamination in groundwater, it would be preferable for this model regulation to include standards that protect groundwater to its beneficial use (e.g., drinking water standards such as MCLs in the groundwater). This would be more consistent with how States are protecting groundwater from chemical contamination.

If you have questions regarding these comments or EPA’s policy for addressing radioactively contaminated CERCLA sites, please contact Stuart Walker at (703) 603-8748.

Sincerely,



Bruce Means, Senior Process Manager
for Response Decisions
Office of Emergency and Remedial Response

cc: E. Southerland, EPA/OERR
E. Cotsworth, EPA/ORIA
F. Marcinowski, EPA/ORIA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

MAR 8 2004

Ronald Fraass
Executive Director
Conference of Radiation Control Program Directors, Inc.
205 Capital Avenue
Frankford, KY 40601

Dear Mr. Fraass:

Thank you for the opportunity to review the November 2003 draft of the Conference of Radiation Control Program Directors (CRCPD) model state regulation Part N – Regulation and Licensing of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM). Over the years, the U.S. Environmental Protection Agency (EPA) has commented on numerous drafts of this model regulation and has sought to articulate our concerns and provide constructive suggestions. We continue to support the goals of this long-standing effort and recognize the difficulty in developing regulations covering a range of materials generated by a wide variety of industries. Unfortunately, we must nonconcur on this final version of the Part N model regulation, but hope that interaction with individual States and with CRCPD in the future will lead towards the implementation of protective measures from exposures to TENORM materials.

Our decision to nonconcur is based on long-standing concerns regarding the protectiveness, coverage, and future implementation of the provisions contained in the model regulation. The model regulation fails to contain a risk or dose based standard that assures a level of protectiveness that EPA considers appropriate. EPA has consistently advocated for either a standard based on the same risk range (10^{-4} to 10^{-6}) used by EPA and States to address the cleanup of chemical carcinogens at contaminated sites or a dose based standard (15 mrem/year) such that the lifetime carcinogenic risk levels satisfy the approximate 10^{-4} to 10^{-6} risk range. Although the implementation of the proposed 25 mrem/year disposal standard may approach the same level of protectiveness, there are no assurances that it will.

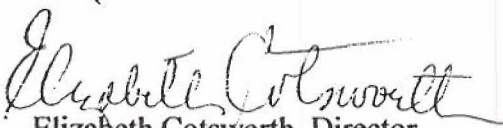
Towards this end, we have advocated for the more protective standard, the more explicit inclusion of an ALARA requirement for standards expressed as dose limits (efforts seeking to minimize exposures as low as reasonably achievable), and have sought more explicit references and requirements to protect groundwaters that are current or potential sources of drinking water to drinking water standards such as Federal and State maximum contaminant levels (MCLs). We have also asked the committee to seek to incorporate potential radon exposures from the management and disposal activities associated with TENORM. These exposures can be of potential concern and have been addressed by some of the more experienced States in their consideration of TENORM.

Over the years, we have also expressed our concerns regarding the coverage of the model TENORM regulation. We continue to advocate for a broader TENORM definition – one that includes natural material where concentrations of radionuclides have been increased and natural material where radioactivity has been made more accessible due to human activity. Not including both portions of the TENORM universe (as recommended by, among others, the National Academy of Sciences and the International Atomic Energy Agency) would exempt large quantities of radioactive material and virtually all products containing TENORM from regulation. TENORM wastes made more accessible to the environment would not necessarily be covered by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or other related environmental regulations. We also believe that a more comprehensive definition accompanied with appropriate exemptions could allay the historic concerns of the Committee and retain an appropriately broad scope for this effort (see, for example, the proposed alternative definition forwarded in our September 20, 2002 comments and included in our attached, more detailed comments).

Finally, we continue to have lingering concerns that make us question whether the current model regulation and this newly amended version provides as clear, as useful and as protective a guidance as it might to state personnel considering TENORM regulation. We question whether the current regulatory language and associated implementation guidance truly resolves or at least describes some of the tradeoffs and concerns that more experienced States have grappled with in their consideration of TENORM. We attach the remainder of our more specific comments to provide additional discussion for States to reference as they consider the provisions contained in the Part N model rule.

We remain committed towards improving the regulatory coverage and protections associated with the use and management of TENORM materials. If you have questions on these comments or wish to discuss these issues further, please contact Adam Klinger in the Office of Radiation and Indoor Air at 202-343-9378, or Stuart Walker at 703 603-8748 in the Office of Superfund Remediation and Technology Innovation (OSRTI).

Sincerely yours,



Elizabeth Cotsworth, Director
Office of Radiation and
Indoor Air



Michael B. Cook, Director
Office of Superfund Remediation
and Technology Innovation

Attachment

US EPA Comments on
CRCPD Part N – Model TENORM Standard
2003 Concurrence Document

Section N.3. Definition of TENORM

As in our comments on previous versions of this document, we believe the Part N TENORM definition is not comprehensive enough. Other U.S. and international organizations utilize a TENORM definition that includes both concentration of natural radionuclides in a material or waste by human actions, and radioactive material which has been made more accessible to humans and the environment as a result of human activities. We note that by not including this slightly broader definition, not only a significant amount of radioactive waste, but nearly all products which include TENORM will be exempted from state regulation. Despite the attention given to product licensing in the concurrence document, and the new addition under Part N.4.a. regulating products with radionuclide concentrations >5 pCi/g, we believe a manufacturer whose product (aluminum oxide abrasion grit for example) contains radionuclides that are not concentrated in the manufacturing process which will be able to avoid licensing by claiming it is not TENORM according to the Part N definition.

In a brief review of state TENORM regulations, we found that at least two states (Georgia and Ohio) explicitly consider “alterations” in exposures from human activity in addition to increases in concentration. In addition, Louisiana suggests the inclusion of exposures that “would not appear without some technological activity.” The IAEA’s recent, December 2003, report¹ provides a definition of this class of substances that also includes both exposure to unaltered materials, as well as increased concentrations of radionuclides.

Consistent with these other definitions and our interest to include both concepts, we again offer a revised definition for Section N.3. below, and recommend deletion of the current footnote #2. Although the Comprehensive Environmental Response Cleanup and Liability Act (CERCLA) has been used to manage unconcentrated TENORM wastes at sites, it is inappropriate to infer that CERCLA offers complete and consistent coverage in all such instances. To provide for exempting trivial situations that the Committee has cited in the past (turning over shovels of dirt, grave digging, etc.), we offer additional exemptions to Section N.4:

For the definition in N.3 we suggest the following change:
“Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)” means naturally occurring radioactive material whose radionuclide concentrations and/or whose potential for exposure to members of the public or the accessible environment are increased by, or as a result of, past or present human practices. TENORM does not include background radiation or the natural radioactivity of rocks or soils undisturbed by human activities or practices.

¹International Atomic Energy Agency, “Extent of Environmental Contamination by Naturally Occurring Radioactive Material and Technological Options for Mitigation”; Technical Report Series No. 419, December 2003, Vienna, Austria.

TENORM does not include "source material" and "byproduct material" as both are defined in the Atomic Energy Act of 1954, as amended (42 USC §2011 *et seq.*) as implemented by the Nuclear Regulatory Commission."

For exemptions in N.4 to the expanded TENORM definition, we offer the following suggestions:

- ▶ an exemption addressing small physical quantities of unconcentrated material [Persons who receive, possess, use, process, transfer, or disturb rocks or soil of less than [X metric tons] are exempt from the requirements of Part N with respect to any combination of ²²⁶Ra and ²²⁸Ra and their progeny].
- ▶ an exemption for particular uses that inherently generate smaller quantities of material [Persons may be exempted from Part N if the materials are used for scientific or engineering study, farming, trenching, or similar excavation].
- ▶ a specific statement not exempting uses that generate more significant amounts of material or material inherently of potential concern [Exemptions would not apply to [homebuilding], mining and mineral extraction, and oil and gas extraction practices].

The accompanying documents to the part N model regulation state that further revisions and/or expansion of the model TENORM regulation are being considered for the future (most explicitly discussed in "Matters for Future Consideration" within the Rationale for Part N). We have stated before, we believe that this "step-wise" approach should be conservative with respect to protectiveness, and, therefore, regulatory coverage should include rather than exclude materials that raise potential concerns or whose use or application could warrant greater scrutiny. States, in their consideration and adoption of this model rule, can adjust and remove items from their regulatory universe, as they see fit. Such a posture again argues for the broader definition of TENORM to be included in the model regulation and revision to other parts of the model regulation in its current form (e.g., the removal of the zircon and metal recycling exemptions, which are discussed below).

Explicit Incorporation of ALARA in Definitions and elsewhere:

We continue to be concerned that the Committee has not adequately incorporated ALARA into the model part N regulation. The explicit inclusion and pursuit of ALARA for standards expressed as dose limits will help insure protectiveness levels that we believe are appropriate. While we appreciate the revised discussion in the Implementation Guidance, we continue to believe discussion is insufficient. Radiation protection prudently incorporates both a numerical dose limitation and the application of ALARA. We believe that the subcommittee and EPA seek to have both the numerical standard and ALARA apply, and the concurrence version of Part N seeks such inclusion of ALARA by referencing as a footnote another model regulation – Standards for Protection Against Radiation – known as part D. Unfortunately, this implementation of ALARA is incomplete in certain respects and less explicit than we would like.

First, Part D does not define ALARA and may or may not be adopted by a particular State, depending upon whether they are currently a NRC Agreement State. Secondly, part D is intended

to cover Atomic Energy Act materials only, and because we believe that TENORM sites, materials, and products extend substantially beyond AEA materials or sites, or effluent releases, this application of ALARA is incomplete when considering TENORM.

As States consider and adopt regulations pertaining to radiation protection, they should seek to reduce actual doses received by the public where possible and reasonable to do so, based on a process that considers the population dose and other safety factors in comparison to economic, societal, and other benefits. The explicit incorporation of ALARA into the model TENORM regulation would serve as a warning that steps should be taken to reduce exposures below a numerical level, rather than permit them up to that level. As an example, we advocate the inclusion of ALARA under Section N.5.a of the regulation that discusses standards of radiation protection for the public and articulates a numerical limit of 100 mRem. By explicitly incorporating ALARA into this model regulation, we avoid potential lapses in coverage because of the way ALARA is referenced or from changes to either part D, 10 CFR 20, or other referenced regulations.

We believe by explicitly including ALARA references, States would be reminded of and pursue appropriate measures to adopt this important aspect of radiation protection when seeking to regulate TENORM materials.

Definition and use of Reasonably Maximally Exposed Individual (RMEI)

N.4.d. Part N uses three different receptors for which dose restrictions must be met: the "reasonably maximally exposed individual" (N.4.f), the "individual" (N.5.a), and the "average member of the critical group" (N.7b.i.). The definition provided for RMEI in N.3. is very generalized and does not match those provided by other agencies. The inconsistency in usage of these terms will create confusion unless additional information is provided. EPA believes that the RMEI has several advantages over the critical group, including ease of implementation and the clear definition of the protected individual. We recommend that the Rationale provide a more detailed description of the similarities and differences among the three approaches, identify guidelines for defining a critical group based on site- or application-specific characteristics, and recognize that in some instances the appropriate critical group may in fact be a single individual.

When using "reasonably maximally exposed individual", if CRCPD is trying to capture the concept of "reasonable maximum exposure scenario" as used by EPA at CERCLA sites, we would suggest using the Superfund description of "... it is a product of factors, such as concentration and exposure frequency and duration, that are an appropriate mix of values that reflect averages and 95th percentile distribution." (See 55 Federal Register notice, page 8710. March 8, 1990). The input parameters used for the RME scenario for radioactively contaminated sites may be found in EPA's Preliminary Remediation Goals for Radionuclides and ARAR Dose Compliance Concentrations (DCCs) for Radionuclides electronic calculators, which may be found at <http://epa-prgs.ornl.gov/radionuclides/> and <http://epa-dccs.ornl.gov/radionuclides/>.

Definition of Effluent Releases in Section N.3.

We note that there is no definition of 'effluent' in the regulation, which should clarify that it applies to both liquid and gaseous emissions. The significance of this definition is completeness in applying the standard to radon doses as described below.

Inconsistencies in Section N.4 and Section N.5:

It is not clear that persons exempted from the requirements of Part N under N.4.f are among the "licensed or registered sources of radiation including TENORM" that must be taken into account in N.5.a. These provisions leave open the possibility of cumulative exposure to several exempted TENORM sources leading to doses exceeding 100 mRem. As well, it could be construed that the exemption in N.4.f. may allow a significant number of possessors/users of TENORM to consider themselves exempt from regulation. We would prefer that N.5.a. read: "Each person licensed under N.10 or N.20 shall conduct operations so that individual members of the public will not exceed 1 millisievert (0.1 rem) TEDE annually from all licensed, exempted, and registered sources of radiation, including TENORM.

N.4.d. Zircon Exemption:

We believe that the zircon exemption is a provision better left for future consideration and therefore more appropriately discussed in Matters for Future Consideration (Section 8.0) of the Implementation Guidance, rather than included, even bracketed, in the model regulation. Based on the materials that the CRCPD subcommittee has shared to date, the Agency cannot endorse the exemption at this point and advises States interested in such provisions to pursue additional analyses. It has not been clear that inhalation risk has been assessed from a full range of particle sizes nor whey chemical and not also physical processes that result in increased environmental mobility should not be of concern. Environmental exposures for a member of the public or children to gamma and alpha radiation from barrels or waste pits/spills of concentrations of zircon product or ore were not assessed when developing the exemption and we are aware of two Superfund removal actions involving end users of the product. We do not rule out the appropriateness of an exemption for zircon operations, but believe justifying such provisions requires more empirical study.

N.4.g. Exemption for Land Spreading of Water Treatment Residuals and Biosolids

While EPA has found that levels of radionuclides in biosolids are safe for use in most instances as a soil amendment, we generally do not recommend this practice for disposal of water treatment plant residuals. When there is no benefit to the public from the material involved, EPA has opposed the practice of disposing of TENORM contaminated wastes through landspreading or soil mixing which are both forms for diluting the concentrations of radionuclides. The practice may result in the creation of newly contaminated sites that require the use of institutional controls to protect future residents from radiation exposures if the lands are released for other uses. CRCPD has utilized EPA's NESHAPS standard for use of phosphogypsum in peanut farms, which requires institutional controls, and inappropriately applied it to water treatment and sewage treatment plant residuals for landfarming without such controls.

N.5. Standards for Radiation Protection for Members of the Public

N.5.a and b. Please refer to our discussion above on need to explicitly incorporate ALARA into this standard instead of referring to Part D, which does not address TENORM.

N.5.c. We believe that potential radon exposure from all management and disposal activities associated with TENORM should be included in the dose assessment, and do not believe the current Part N language adequately considers such exposure. To accomplish this, in addition to including a definition of effluent releases as described previously, the Section should read:

“...except when the dose is due to effluent releases or disposal from licensed operations from handling or processing of TENORM.”

The implementation guidance for section N.5c (page 15, Section 5.1) should be changed to recognize that radon dose from solid materials disposal needs to be considered, in addition to that from effluent.

N.7.b. Use of "Unrestricted Use" Dose Standard:

Section N.7.b includes a criterion of 25 millirem per year (mrem/yr) for release of a site for unrestricted use. This is similar to the 25 mrem/yr primary standard that is contained in CRCPD's Part O - Decommissioning model standard. EPA previously non-concurred with the release of the Part O - Decommissioning as a suggested state regulation because of concerns which include, but are not limited to, the failure of the regulation to recommend a separate standard or requirement for ground water protection and failure of the regulation to recommend a risk (either within or adopting the 10^{-4} to 10^{-6} cancer risk range) or dose (15 mrem/yr or less) standard that the EPA considers protective of human health and the environment. We continue to encourage States to develop site cleanup rules that are consistent with the protectiveness goals of CERCLA. The limited footnote reference to CERCLA policies and the CRCPD License Termination Rule of Part O do not meet EPA concerns, as we have similar objections to the Part O standard.

In the *Rationale for Revisions* document, in the third item for future consideration, CRCPD asks EPA to “identify for SR-5 situations in which TENORM contamination of groundwater occurred that was not amenable to regulatory intervention under existing laws.” As EPA mentioned in previous comments, groundwater TENORM contamination is already being addressed at several sites under CERCLA. Although CERCLA may be able to address other future instances of TENORM contamination in groundwater, it would be preferable for this model regulation to include standards that protect groundwater to its beneficial use (e.g., drinking water standards such as MCLs in the groundwater). As we have explained to CRCPD in previous correspondence, almost all states have established specific standards for radionuclides in ground water or have drinking water standards that address radionuclides that may be appropriate to be used as cleanup standards for ground waters which are current or potential sources of drinking water.

Section N.7.f.--Conditional Release of Metal for Recycle

This section allows conditional release of contaminated metals for metal recycling if surface radioactivity levels are <50 microR/hr. We do not understand this exemption and do not believe that there are stakeholders interested in pursuing conditional release of metals on a generic basis. Furthermore, we do not believe it appropriate to retain these provisions related to conditional release in the model rule both because of difficult implementation issues and the clearance levels suggested. In particular, we believe that (1) conditions and/or restrictions need to be articulated even within the recycling industry (oil and gas piping to be recycled into new oil and gas tubular goods) to identify what material is being released and for what purpose; and (2) that much lower dose standards, consistent with established clearance limits, be applied.

Conditional release, in the parlance of radiation standard setting, means that some restriction would be put on the material itself, for example, the recycled metal may only be used in the manufacture of bridge abutments or foundations (this may be appropriate for cases of shorter half-lived nuclides such as Co-60). The Implementation Guide says (at the end of section 6.2) "pipe could be conditionally released for such purposes as smelting, construction of fences or other". EPA does not consider smelting of contaminated pipe, or reuse in fences or swing sets, to be conditional release, nor do NRC, DOE, or the IAEA. In fact, no regulatory or standard setting bodies, national or international, are considering conditional or restricted release of materials. Rather, only free release of materials (clearance) is under consideration due to the difficulty in maintaining materials in the restricted use as intended. Metals are recycled frequently. Fences may be torn down in ten years, and recycled or wind up triggering detectors at land fills. We were not clear whether the model rule intended to allow free release and under what circumstances.

Clearance limits applicable to the release of scrap metals are calculated to a dose of 10 μ Sv, in accordance with European Basic Safety Standards and the IAEA. This is a widely accepted clearance level. The Nuclear Regulatory Commission is promulgating regulations to this level. The accepted dose from release of scrap materials corresponds to activity levels much lower than 50 microR/hr even if it were to include background (of radium, for example). No national or international standard setting body considers 50 microR/hr appropriate for release of metal objects to the public, whether for smelting or reuse in any fashion.

Section N.8.c.--Disposal and Transfer of Waste for Disposal

While Section N.9 states "purposeful dilution to render TENORM exempt shall not be performed without prior Agency approval," section N.8.c seems to encourage dilution by stating "the criteria in N.5 (dose limit to the public of 100 mrem/yr) shall be used by the Agency to determine whether or not to approve such a request." This could be interpreted that CRCPD is encouraging dilution of TENORM and allowing exposure of the public (e.g., by land spreading) to any dose under 100 mrem/yr. We are assuming that this was not CRCPD's intent. Mixing, blending, and dilution of contaminated soils with uncontaminated soils in order to achieve remedial goals is inconsistent with the objectives of the CERCLA.

Part 20—Specific Licenses and following for products

As we have stated previously, sections related to licensing of products most likely would be challenged since products containing TENORM have not enhanced the concentration of radionuclides, only the exposures of humans and the environment to radiation. Unless the definition of TENORM in Section N.3. is expanded to take this into account, these sections of the model regulation cannot be implemented successfully.

2003 Rationale for Revisions

EPA has previously developed guidance on how to cleanup radioactively contaminated CERCLA sites in a protective and cost-effective manner and we feel that this guidance may be useful to CRCPD and Agreement States when developing rules. This guidance can be found at <http://www.epa.gov/superfund/resources/radiation/index.htm>.

Implementation Guide

1.0 Introduction.

This section fails to reference the EPA statutory authorities which allow states to establish some of their radiological controls, such as the Safe Drinking Water Act and Clean Water Act. As we've noted before, most states have adopted radiation standards for water that would need to be taken into consideration in regulation of TENORM, waste disposal and cleanup.

1.1 Basic Radiation Protection Standards

Page 7, paragraph 5. The discussion on recycling and waste fails to take into account the concerns raised both by States, and EPA regarding the NRC Alternate Feed policy at uranium mills. The statement that "If material is recycled it is not a waste" fails to recognize the importance of RCRA in determining if it can be recycled. Under the federal rules, the entities handling recycled materials are responsible for determining whether legitimate recycling is occurring and whether the material is a solid waste, with oversight by the responsible regulatory agency—in this case either the State or EPA. The statement should be modified to read: If material can be legitimately recycled in accordance with agency determinations under RCRA and the AEA, it may not be considered a waste".

Page 8, first and second paragraphs. The discussion on the exemption for zircon solely on the basis of the inhalation standard fails to recognize the gamma radiation posed by concentrated raw ore, zircon flour, or other zircon products when disposed off site, or kept in work or storage areas. Failure to mention this exposure situation, which has resulted in licensure in Florida, and CERCLA removals elsewhere, is inappropriate.