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October 7, 1994

94-RF-10310

F. R. Lockhart  
Environmental Restoration Division  
DOE, RFFO

### COMMENTS TO THE DRAFT SUGGESTED STATE REGULATIONS ON NATURALLY OCCURRING RADIOACTIVE MATERIAL - SRK-209-94

Ref: Frazer R. Lockhart (09677) ltr to Steve R. Keith, Draft suggested State Regulations on Naturally Occurring Radioactive Material, September 13, 1994

Action: None Required

In response to the above referenced letter, please see the attached comments concerning the impact this draft of Part N of the "Suggested State Regulations for Control of Radiation" might have on Operable Unit 4.

If you have any questions please contact me at extension 8541, or Kathy London of my staff at extension 8585.

S. R. Keith  
Program Manager  
Solar Pond Projects

KCL:pjm

Orig. and 1 cc - F. R. Lockhart

Attachment:  
As Stated

- CC:
- S. Howard - DOE, RFFO
  - S. Surovchak - " "
  - M. Witherill - " "

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## Background

The draft Part N regulations have been under development for about ten years. The effort was prompted by increasing interest in the commercial use of non-uranium / non-thorium radioactive materials, and the unintended but inevitable concentration of NORM in industries such as oil production and water treatment. The draft regulation would apply to Naturally Occurring Radioactive Materials (NORM) that is added to products, processed, or disposed. NORM, by definition, does not include byproduct, source, or special nuclear material; but, similar to RCRA requirements for mixed wastes, the presence of such material does not constitute an exemption. While no operations at Operable Unit 4 (OU 4) are intended to concentrate NORM, NORM is ubiquitous so a review of the draft regulations is reasonable.

## Summary of Draft Regulation from OU 4 Viewpoint

The intent of the authors is to treat NORM facilities as much as possible like other facilities that are regulated under the Atomic Energy Act. Soil contamination limits, criteria for unrestricted use, and disposal requirements are intended to closely track existing regulations. Several items are of interest:

- Radium concentrations are the sole determinants of material control, based on the authors' belief that radium is the primary indicator of health hazard from NORM. Materials contaminated at less than 5 pCi/g above background are exempted. "Background" is not defined beyond limiting the 5 pCi/g to a measure of radium 226/228 and would not be defined in the regulation; any guidance on determining background is intended to be issued after the regulation is promulgated.
- Licensing requirements apply to all non-exempt handling and disposal of NORM. (The draft language is not fully clear, but it appears to be the intent that exemptions need not be licensed.)
- Land released for unrestricted use must have radium 226/228 soil concentrations no higher than 5 pCi/g over background (averaged over any 15 cm layer of soil below the surface).
- Operations must limit off-site releases of radioactive material so no member of the public receives an annual total effective dose equivalent of 25 mrem. Dose from disposal must also be limited, by design and practice, to 25 mrem/yr. Doses from radon 220/222 are excluded from the dose calculations.
- Disposal must be unlikely to release radon that would increase average indoor radon levels by more than 0.4 pCi/l, and options for disposal must preclude radon emanations that would result in residential radon concentrations exceeding 4 pCi/l.
- Acceptable surface contamination levels for NORM are proposed, corrected for background, at 5,000 dpm alpha per 100 cm<sup>2</sup> and 5,000 dpm beta, gamma per 100 cm<sup>2</sup>. The authors specifically rejected more complex proposals to designate allowable levels by isotope, though the operator would presumably need to measure contamination by NORM independently from contamination by source material.

## Potential Impacts to OU 4

If the draft Part N were promulgated, it could be of interest to OU 4. While OU 4 does not include any of the activities that prompted the draft regulation, NORM is ubiquitous. The intent of the authors is to closely track existing regulations, so conceptually it would be unlikely that any new requirements would be applied to OU 4, even if the draft Part N were found to apply. Some additional radium analysis might be required to support release to unrestricted use of the area outside the cap.

Two Specific Items may be of Interest to OU 4

- It is possible that OU 4 Phase I remediation would be exempt from the NORM regulations. No OU 4 operations are intended to concentrate NORM: movement and compaction of soils would not change the levels from the existing background, and treatment of the remediation wastes would dilute rather than concentrate any NORM present. It is possible, however, that NORM occurring in the pond wastes would have been concentrated by treatment prior to the Phase I remediation and could, therefore, be present above the exemption level. Further, in Phase II, treatment of ground water (if found to be necessary) could concentrate NORM. These observations would probably be relevant to other operable units at Rocky Flats: concentration of NORM would be unlikely in the management of soils, but possible in water treatment operations.
- Radium is not a contaminant of concern for OU 4, but the need to compare radium levels to background for the draft Part N would create the need for some further analysis. There is, as yet, no guidance on determining NORM background, so presumably the methods established to date for Rocky Flats would be acceptable. Calculation of potential future radon levels in future residential use would also represent a new area of analysis; since residential development on top of the cap will not, presumably, be allowed, radon levels might be arguably moot and radium limits for unrestricted use would not apply to the cap area.