

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

MAR 24 1993

Docket No. 030-07022  
License No. 29-13613-02  
Control No. 114377

MEMORANDUM TO: John E. Glenn, Chief  
Medical and Commercial Use Safety Branch  
Division of Industrial and Medical Nuclear Safety, NMSS

FROM: Ronald R. Bellamy, Chief  
Nuclear Materials Safety Branch  
Division of Radiation Safety  
and Safeguards, RI

SUBJECT: Technical Assistance Request:  
RTI, Incorporated (Process Technology)  
Reduction of Limits for Contaminated  
Soil On Site

RTI, Incorporated (formerly Process Technology) submitted a request in a letter dated January 3, 1991 to amend License No. 29-13613-02 to reduce the limits for possession of cobalt-60 in contaminated soil on their property. The licensee submitted information regarding the results of remediation activities in letters dated June 3, 1991; July 8, 1991; October 15, 1992; and January 4, 1993. Copies of these letters are enclosed. Information regarding past surveys to identify soil contamination and burial of materials on the site is found in their letters dated April 3, 1987; May 12, 1987; June 12, 1987; August 3, 1987; September 17, 1987; December 14, 1988; March 20, 1989; May 1, 1989; July 6, 1989; July 16, 1990; and August 30, 1990 and in the Oak Ridge Associated Universities Report "Radiological Survey, Radiation Technology Incorporated (Unrestricted Area), Rockaway, New Jersey" dated August 1987. These letters are included in the docket file and are in NuDocs.

We request assistance in determining the information necessary to form an adequate basis to release the site for unrestricted use and/or reduce the possession limits. We have issued deficiency letters dated May 2, 1991 (responses June 3, 1991 and July 8, 1991) and September 11, 1992 (responses October 15, 1992 and January 4, 1993) which request clarification of items submitted. However, the licensee's efforts were never well organized or planned and very little soil or water sampling was performed on the site. We have drafted an additional deficiency letter requesting that systematic biased and unbiased sampling of the site be performed and that information regarding the hydrogeology and groundwater be

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Memorandum  
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submitted. A sampling plan of the scope requested in our draft letter requires a large expenditure of time and money, and we do not want to require such an expenditure if it is not appropriate. Please provide comments on our approach. This is an SDMP site.

  
Ronald R. Bellamy, Chief  
Nuclear Materials Safety Branch  
Division of Radiation Safety  
and Safeguards

Enclosures:

1. RTI letter dated January 4, 1993
2. RTI letter dated October 15, 1992
3. NRC letter dated September 11, 1992
4. RTI letter dated July 8, 1991
5. RTI letter dated June 3, 1991
6. NRC letter dated May 2, 1991
7. RTI letter dated January 3, 1991



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DRAFT DEFICIENCY

Docket No. 030-07022  
License No. 29-13613-02  
Control No. 114377

RTI, Incorporated  
ATTN: John D. Schlecht  
Radiation Safety Officer  
108 Lake Denmark Road  
Rockaway, New Jersey 07866

Dear Mr. Schlecht:

Subject: Remediation Activities

This refers to your letters dated June 3, 1991, July 8, 1991, October 15, 1992, and January 4, 1993 regarding the remediation of contaminated soil at the Process Technology North Jersey facility in Rockaway, New Jersey. We have reviewed the information submitted in these letters, as well as information submitted in the past, to support your request to reduce the amount of cobalt-60 contaminated material listed on your license.

We understand that contamination of soil on this site was caused by 1.) burial of material on the site, and 2.) release of contaminated water from the washing of resins, etc. We understand that buried material was only identified on two hand-drawn maps of the northeast corner of the fenced property. No additional records of these or other burials are known to exist. We further understand that buried material was recovered from a series of trenches dug in the northeast corner, and surveys of the trenches were performed. Based on our review of all these facts and all the information available to us, the following conclusions seem appropriate.

The criteria used for remediation of the locations you have designated as Areas A, B, C, and D was based on Regulatory Guide 1.109, NUREG-3332, and the MICROSHIELD computer code. These were used to determine radiation levels which could be measured with a microR meter and were representative of the given release criteria of 8 picocuries of cobalt-60 per gram (pCi/g) of soil in unrestricted areas, and 15 pCi/g inside the fence. However, these documents assume that measured radiation levels are due to surface contamination migrating downward. Therefore, the radiation level surveys performed with the microR meter at the surface cannot be used to identify contaminated materials buried as much as six to eight feet below the surface and cannot be used as the basis for stating that no burial sites exist other than those remediated in the northeast corner.

The magnetometry scan performed in 1987 also cannot be used as a basis for stating that no burial sites exist other than in the northeast corner because it covered only a small portion of the fenced area, and did not include areas closer to the warehouse, west of the buildings, or outside of the fenced area. It is our understanding that no other surveys or samplings were performed to determine if radioactive material is buried in any other areas within the fenced site (or on any other areas of your property) and that only one core sample was performed in one of the remediated areas. In addition, no soil samples were analyzed during remediation activities to verify the adequacy of microR measurements. Therefore, there is little information which indicates that there is no radioactive material buried in these areas.

In order to continue our review, we request the following additional information:

1. Develop and submit a plan for performing core soil samples at your facility. The sampling plan should be in accordance with standard procedures for identification of contamination in the environment, such as NUREG/CR-2082, "Monitoring for Compliance with Decommissioning Termination Survey Criteria" (June 1981); "Survey Procedures Manual for the ORAU Radiological Site Assessment Program," Oak Ridge Associated Universities (May 1987); the U. S. Department of Energy "Environmental Survey Manual" (August 1987) or NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination" (Draft, June 1992). Provide the basis for the selection of a particular method of obtaining samples, the number of samples, the locations and depths of samples, and the type of analyses to be performed. The minimum plan should include:
  - a. Unbiased soil borehole samples selected from regular intervals of the entire area inside the five acre fenced area, regardless of the known or potential contamination. Based on an acceptable grid size of 30 meters by 30 meters (or 100 feet by 100 feet) for selection of unbiased areas, a minimum of 15 core samples would be expected from the unpaved areas inside the five acre area.
  - b. Biased core samples selected from the northeast corner of the site; the area behind Building 62, leading to Area C outside the fence; and the area west and south of Building 61, including Area D and the leach field. Based on an acceptable grid size of 10 meters by 10 meters (or 30 feet by 30 feet) for selection of biased samples, a minimum of 25 samples should be collected from these areas.
  - c. Biased core samples to determine the depth of soil contamination in Areas A, B, C, and D.

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- d. Gamma logging of bore holes, and on-site screening of soil samples to identify the maximum radiation level from each core sample.
  - e. Analysis of the cobalt-60 concentration of the sample having the maximum radiation level reading for a given borehole; and analysis of any sample which exceeds a predetermined trigger level during onsite screening.
  - f. A description of the instrumentation to be used for radiation level measurements, gamma-logging of boreholes, and onsite screening of soil samples; a description of the equipment to be used for drilling core soil samples; a description of the methods used to determine the cobalt-60 content of the soil samples, including any sample preparation methods used; and a description of the method used to identify and track samples to be analyzed (chain-of-custody procedures).
  - g. A description of the records which will be maintained, including the location, depth, and material type of each borehole; radiation level measurements made during gamma-logging of boreholes and onsite screening of soil samples; analyses of samples; calibration of instruments and daily instrument performance checks.
2. Submit plans for sampling water and sludge from Lake Denmark. Include the following information:
- a. The estimated size and volume of Lake Denmark, and the flow(s) of water into and out of the lake.
  - b. The location and depth of water samples, including the basis for choosing these sample locations.
  - c. The location and depth of sludge and lake sediment samples, including the basis for choosing these sample locations.
  - d. The method for obtaining water and sludge samples.
  - e. The method for analysis of samples, including the expected minimum detectable activity.
  - f. Other sources of potential contamination of Lake Denmark, in addition to your facility.

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3. Submit a description, with diagrams of the site, of groundwater flow and the hydrogeology of the site.
4. Submit a plan for sampling existing wells for the presence of cobalt-60 and migration of cobalt-60 in ground water from the site to Lake Denmark.

Thank you for your cooperation in this matter. If you have any additional questions, please contact me.

Sincerely,

John D. Kinneman, Chief  
Site Decommissioning Management  
Plan Task Force  
Division of Radiation Safety  
and Safeguards