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October 25, 2000

UNITED STATES NUCLEAR REGULATORY COMMISSION
ATTN: PAUL H. LOHAUS, DIRECTOR
OFFICE OF STATE PROGRAMS
MAIL STOP O3H20
WASHINGTON, D. C. 20555

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Dear Mr. Lohaus:

As you may be aware, the Texas Department of Health (TDH) regulates several in-situ uranium mines that are in the process of closure. For the past two years, we have been reviewing a request by one of our licensees to utilize soil homogenization as an alternative method for reclamation of a former irrigation project which was used to dispose of bleed waters from an operational in-situ uranium facility. TDH staff are reviewing the amendment application under the rules for alternative proposals similar to those found in 10 CFR 40, Appendix A. As such, our review has taken into consideration "local or regional conditions, including geology, topography, hydrology, and meteorology." This proposed method would utilize a piece of equipment called a Roto-Mixer which blends different layers of material (in situ) into a homogeneous mixture in the same way that road base lime and sand are mixed in situ with native soil to increase stability of a finished road. TDH staff would like to obtain conditional concurrence from the U.S. Nuclear Regulatory Commission (NRC) on the implementation of this method which is designed to reduce the soil concentration of radium and uranium in the first 15 cm to 5 pCi/g and 30 pCi/g, respectively and to release the site for unrestricted use.

This test project is designed to demonstrate a process by which byproduct waste material in soil may be processed to meet the soil release criteria in the regulations. The waste material would be homogeneously mixed from the soil surface down to a depth of 18 inches. Such mixing should effectively redistribute radium throughout the soil column and arrive at the 5/15 pCi/g radium-226 soil standard. In addition to demonstrating attainment of the soil concentration, the licensee will demonstrate or otherwise show that the contaminating material is stabilized and contained to a level equivalent to or more stringent than the state and federal regulations. The remoteness of the site, its topography, geology, soil type, and geohydrology all seem to support the proposal that this process would provide the stability and containment required. Also, as part of the site characterization, the licensee provided analysis of hazardous constituents. Our review indicates that there are no non-radiological constituents that would preclude release of the sites. In addition, the establishment of a vegetative cover should minimize erosion and migration of soil offsite. Staff

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consider this to be an in-situ process and would, therefore, not cause the proliferation of small disposal sites. Furthermore, if the process can bring the radium concentration down to 5/15, the site could be released for unrestricted use, including returning it to its original use of livestock grazing.

To demonstrate the effectiveness of this method, the licensee homogenized the soil in a test plot of approximately one acre using the proposed process. After completion of soil mixing, the licensee submitted data to show the results of the process. Preliminary results indicated some difficulty in achieving the 5/15 radium soil standard in the test plot area. TDH staff have requested additional information from the licensee which would address the difficulties noted in the test plot. TDH staff are continuing to review the test plot data. If the licensee can produce data which supports the use of soil homogenization to meet the soil criteria in the regulations, staff would anticipate amending the license for the use of soil homogenization throughout the remaining irrigation area (approx. 20 acres) and possibly two other irrigation areas on the same license.

Even though the property will be released for unrestricted use, we have obtained an acknowledgment from the property owner that he is aware of the process to be used on his property and has no objections.

Another consideration in our review has been the potential hazard associated with transporting any material over great distances. Not only has the licensee shown that there is a non-radiological hazard associated with shipping any material, such as traffic accidents, but that the actual dose to the public may be greater during transportation than from the proposed process.

Finally, the licensee has demonstrated that there is a considerable financial benefit to using this method. They have estimated that it would cost approximately \$4,739,885.00 to remediate the site using a conventional removal and disposal method and only about \$257,445.00 using their proposed method.

Because TDH staff anticipate making a final decision concerning this project soon, we request your opinion as to whether NRC would be able to grant concurrence on this methodology. The information we have presented is an extreme simplification of the process and items analyzed during our review of this request. If you have any questions, please call me at (512) 834-6689 or Mr. Eugene Forrer of my staff at (512) 834-6688 extension 2208. Your prompt response is greatly appreciated.

Sincerely,



Ruth E. McBurney, Director
Division of Licensing, Registration, and Standards
Bureau of Radiation Control