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October 28, 2005

Marie Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety  
US Nuclear Regulatory Commission Region 1  
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Dear Ms. Miller:

Thank you for the opportunity to review and comment on the Final Report: Dose Assessment for Unrestricted Future use Scenarios Following License Termination of the Heritage Minerals, Incorporated Site in Lakehurst, NJ (the dose assessment report). Some of our questions/comments were addressed in a telephone conference call on October 25, 2005 with members of your staff and Dave Brown, the author of the dose assessment report. However, we still have the following outstanding issues.

1. There does not appear to be an absolute account of the location of the former monazite pile and there is no comprehensive scaled map showing all post-remediation sampling data. The diagrams in the various reports are not drawn to any specific reference points. The naming of the sampling points is confusing. For example, Heritage consultants named their sampling points ORISE-1,2,3, etc. Staff of the Oak Ridge Institute for Science and Education (ORISE) were at the site twice where the same sample identification numbers were used at different locations. This issue is so troublesome because the Nuclear Regulatory Commission (NRC) intends to release only the former monazite pile footprint (along with the wet/dry mill pads), and claims no authority over the surrounding land areas (designated by the NRC as the buffer zone), where there are soil concentrations above the NRC's cleanup level.

2. Even though there was licensable source material, so called "fugitive" source material, in this buffer zone, the NRC did not include these areas in the dose assessment report. The NRC required Heritage to remediate areas that were above 116 pCi/g total Thorium (the source material threshold used by the NRC), but areas contaminated below 116 pCi/g are allowed to remain, even though they are above the NRC's cleanup level of 10 pCi/g. This is a significant deviation from the NRC's ALARA principle. Not far from the latest footprint of the former monazite pile are samples that range from 32 to 70 pCi/g total thorium and from 33 to 78 pCi/g of total uranium. What is the

NRC's rationale for believing that this area (the trench area) was not contaminated by licensable activities? A dose assessment on this area results in over 500 millirem per year (mrem/y). Would a hypothetical resident who builds a house on the footprint of the former monazite pile be restricted from this elevated area somehow?

3. The data itself seems to be questionable. The NRC took "split" samples with Heritage's consultant Enercon. Enercon underestimated the results for 7 out of 15 of these samples by a factor of from 2 to 80. During the conference call it was explained that these samples may not have been true split samples since they were not mixed prior to splitting. If that were the case, one would expect that close to half of the samples would have underestimated the result and close to half would have overestimated the result. The laboratory used by Enercon is not certified by the State of New Jersey so we cannot attest to the accuracy of these results. The NRC did use their sample results (the more conservative values) in the dose assessment, however ten out of a total of 15 samples used in the averaging for the input to the dose assessment were analyzed only by Enercon. NRC's response is that the Enercon-analyzed values seem appropriate and in line with the rest of the data. We believe this is unacceptable.

4. Because of the questionable location of the footprint of the former monazite pile, we believe that a buffer zone should also be included in determining whether to release this area for unrestricted use. Isn't it unusual that a remediated area does not have a buffer zone surrounding it that also must meet the cleanup criteria? From the State's perspective, this is standard practice in any remedial action involving radioactive materials. For the NRC to simply "walk away" from levels above their cleanup criteria so close to the former monazite pile seems unprecedented. Are there other NRC-approved remedial actions that allowed this practice? We believe that the area should be expanded to include a buffer zone and a MARSSIM final status survey should be performed over the entire area. Any dose assessment should include the buffer zone data.

5. Notwithstanding the above concerns with the input to the dose assessment model, we find that the dose assessment was performed properly using acceptable models (RESRAD and RESRAD-BUILD). The results speak for themselves. Not only are the results above New Jersey's dose criterion of 15 mrem/y, they are above the NRC criterion of 25 mrem/y. For the resident farmer scenario, the dose is over three times the NRC standard. Not suprisingly, New Jersey cannot agree to a unrestricted release of the NRC licensed areas.

If you have any questions related to this review, please call Jenny Goodman at (609) 984-5498.

Sincerely,

  
Patricia Gardner  
Manager

c: Jill Lipoti, Ph.D., Director, DESH  
Jennifer Goodman, RPRP