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(PR-61)

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Mr. Walter M. Culkowski  
Research Meteorologist  
Atmospheric Turbulence and  
Diffusion Laboratory  
National Oceanic and Atmospheric  
Administration  
P.O. Box E  
Oak Ridge, Tennessee 37830

Dear Mr. Culkowski:

This is in response to your questions in your May 20 letter regarding the equation used in NUREG/CR-1759, Volume 3, to model wind suspension of dust from a low-level waste disposal site. This equation was obtained from the uranium mill tailings GEIS (NUREG-0706) and was used in the EIS on the Part 61 regulation to estimate an upper bound level of impacts from wind erosion of a closed disposal facility. For purposes of analysis, the impacts were conservatively assumed to occur within a few thousand years of disposal facility closure and also no credit was taken for the ability of waste form and packaging or facility siting, design, and operation to reduce releases. The calculated results were on the order of 150 man-millirem/yr (bone) to a total population of about a million persons within a 50 mile radius of the disposal facility. This was one of the factors that led us to conclude that provided that a disposal facility is sited, designed, constructed, operated, and closed in accordance with the Part 61 requirements, potential impacts from wind erosion should not be a problem. We believe that this would be a reasonable conclusion even if the calculated population exposures were one or two orders of magnitude higher. This statement follows from (1) the conservative nature of the calculated impacts, (2) the many requirements in the Part 61 regulation which taken together should minimize disposal site erosion (if not prevent it for all practical purposes), and (3) the many standard construction techniques which can be used to minimize or prevent erosion.

You state on the first page of the letter that you believe the equation to be far too conservative. On page two of your letter, however, you suggest that it would be more "realistic and conservative" to replace the calculated natural suspension rate with a suspension rate based upon consideration of heavy construction activity. This suggestion appears to be contradictory since it would result in a suspension rate about 500 times greater than the rate you believe to be already overconservative.

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In any case, we do not believe that the use of the construction-based value to represent natural wind suspension to be either appropriate or more realistic, particularly not for the eastern United States.

The  $2 \times 10^{-6}$  constant is also believed to be correct. The factor of  $10^4$  difference between  $2 \times 10^{-10}$  and  $2 \times 10^{-6}$  results from converting the suspension rate units from  $\text{gm/cm}^2\text{-sec}$  to  $\text{gm/m}^2\text{-sec}$ .

I also reviewed your letter with our Uranium Recovery Licensing Branch since emissions from uranium mill tailings impoundments may be more directly affected by differences in calculated wind suspension rates. Similar to us in the Low-Level Waste Licensing Branch, they are concerned with the issue of validating models with field data. They have indicated to me that they believe that the uranium pile study mentioned by you, NUREG/CR-1407 (PNL-3345), may not be the best document to use to compare field data with dust suspension models. As stated on page 214 of this report: "Although many field studies have been made to obtain the necessary detailed source-term information, the application of the model using the field data for source term has not been possible at this writing. Further, the field data on airborne particles has not disclosed the consistent relationships between the source term and variables which had been anticipated in the scope of the study." The Uranium Recovery Licensing Branch has recently initiated a technical assistance project with Argonne National Laboratory (FIN No. A2160) to obtain further input in this area. This contract is expected to be an ongoing effort to maintain an up-to-date model which would be consistent with field monitoring data.

Thank you for your consideration. We look forward to your recommendations on modeling gaseous releases from low-level waste disposal facilities.

Sincerely,

Original Signed By

G.W. Roles



Paul H. Lohaus  
Low-Level Waste Licensing Branch  
Division of Waste Management

\*See previous concurrence.

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Thank you for your consideration. We look forward to your recommendations on modeling gaseous releases from low-level waste disposal facilities.

Sincerely,

Paul H. Lohaus  
Low-Level Waste Licensing Branch  
Division of Waste Management

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