MEMO/COOL

APR 9 1991

MEMORANDUM FOR: Donald A. Cool, Chief
Radiation Protection & Health Effects Branch
Office of Nuclear Regulatory Research

FROM: Ronald L. Ballard, Chief
Geosciences & Systems Performance Branch
Division of High-Level Waste Management, NMSS

SUBJECT: REQUEST FOR ASSISTANCE

The FY 90-91 Operating Plans for the Division of High-Level Waste Management, NMSS require the establishment of an in-house capability to conduct performance assessments for a geologic repository. For the period after permanent closure, these assessments involve the estimation of the potential exposures of members of the public that could result from releases of emplaced radionuclides from the repository after transport into the accessible environment. Several years ago, the following models for environmental transport, dosimetry and risk estimation were developed for the NRC by Sandia National Laboratory (SNL):

"Risk Methodology for Geologic Disposal of Radioactive Waste: Dosimetry and Health Effects," NUREG/CR-2166, (July 1981); and,

"Risk Methodology for Geologic Disposal of Radioactive Waste: Model Description and User Manual for Pathways Model," NUREG/CR-1636, Volume 1, pages 54-64, (March 1981).

We are currently reviewing these models and we request your assistance in supplying updated estimates of the parameters appearing in those models, i.e., dose conversion factors (ingestion, inhalation and external exposure), risk coefficients and bioaccumulation factors (or concentration ratios). Your recommendations, and the rationale for each, are also requested for the following questions.

° For the values to be used as dose conversion factors (DCF):

-What values are to be used for members of the public?

-Should these values be used for adults only (as in the SNL report) or for both adults and children?

-What lung solubility class(es) should be used for the DCF for inhalation exposure (these are not known with certainty for a repository).

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-Should both the period of intake for the radionuclides and the dose commitment period be for 70 years (as used in the SNL models) or for a one-year intake and a 50-year dose commitment period as used in other NRC models?

-Which DCF are recommended to calculate external doses as required by Section 20.301(a)(2) of 10 CFR Part 20?

° For the values to be used as risk coefficients:

-Should a 30-year or lifetime plateau be used?

-How many separate organs should be included in the risk calculation?

-Is the method for calculation of individual organ risks used by SNL in Table 3.3 of NUREG/CR-2166 acceptable?

Once the information requested above is available to HLGP, it will be sent immediately to a firm now under contract to IRM for entry into the SNL computer code. The contractor is prepared to process this input as soon as it is available.

If this input is available to HLGP by the end of April 1991, we may be able to meet the May milestone in our FY 90-91 Division Operating Plan. We would appreciate any help you can give us that will enable us to meet this schedule. The requested information, and other potential questions that may arise, will be coordinated by our technical lead, Robert Neel. He can be reached on extension 20448.

Sincerely,

Ronald L. Ballard, Chief
Geosciences & Systems Performance Branch
Division of High-Level Waste Management, NMSS

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/s/

Ronald L. Ballard, Chief
Geosciences & Systems Performance Branch
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