

October 30, 2000

MEMORANDUM TO: Larry Camper, Chief
Decommissioning Branch
Division of Waste Management

FROM: Tom Essig, Chief **/RA S.Wastler for/**
Environmental and Performance
Assessment Branch
Division of Waste Management

SUBJECT: RESPONSE TO SOIL CLEARANCE TECHNICAL ASSISTANCE
REQUEST (EPAB-TAR-5)

By letter dated August 3, 2000, you requested that the Environmental and Performance Assessment Branch (EPAB) perform a technical review of documents developed to support the clearance of soils from U.S. Nuclear Regulatory Commission-licensed facilities.

The review was to focus on four areas:

- 1) Draft Report NUREG-1725,
- 2) Statement of Work for Phase II,
- 3) Reused Soils Scenarios/Clearance Dose Assessment, and
- 4) Environmental Assessment Considerations.

The Performance Assessment Section (PAS) of EPAB reviewed the information provided and participated in a few meetings with the soil clearance working group. A number of comments provided verbally by the staff have already been incorporated into current versions of soil clearance working group material. Overall, the PAS review shows that the soil clearance working group's approach is appropriate.

The staff put most of its effort into reviewing the first and third areas. Comments for all four areas are attached. If you have any questions about these comments, please contact me or Christopher McKenney of my staff at extension 6663.

Attachment: Comments on Soil Clearance Modeling Effort.

CONTACT: Christopher McKenney
301-415-6663

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ACNW: YES X NO

This document **should** be made available to the PUBLIC SW 10/30/00

COMMENTS ON SOIL CLEARANCE MODELING EFFORT

The following is a set of comments on the various materials supplied to the reviewers. The review focused on four areas:

- 1) Draft Report NUREG-1725,
- 2) Statement of Work for Phase II,
- 3) Reused Soils Scenarios/Clearance Dose Assessment, and
- 4) Environmental Assessment Considerations.

Each area was subdivided by specific questions. The comments follow the format of the technical assistance request.

Review of draft NUREG-1725

1. Comments on identification of new information sources, application of existing references, and suggested modification of listed information sources.
 - NUREG-1725 documents the results from an information search by the contractor. During discussions with staff, it was noted that the U.S. Nuclear Regulatory Commission has separately gathered information sources and they would not be documented in NUREG-1725. The staff-gathered material should be documented in a companion document to NUREG-1725.
 - Consideration should be given to searching the National Technical Information Service and the International Nuclear Information System databases.
 - NUREG-1725 includes a list of the final selected documents to potentially utilize as informational sources. Currently, they are listed like a bibliography. It would be more useful if each included a brief abstract of its contents, especially if only part of the document is appropriate for use.
2. Comments on Table 1
 - It is not clear the purpose of distinguishing between reuse of golf courses versus reuse for athletic fields. Presumably similar exposures will occur for both.
 - The report needs to be more explicit in terms of distinguishing between the various types of soil remediation methods. There is more than one type of remediation method, each of which could result in different exposures. Presumably, soil washing would be one type of remediation, yet the report lists it separately from soil remediation.

- A special type of backfill that should be considered is called “soil mortar¹”, which could be used for conduit trenches for gas and water distribution.
- There has been some recent work in looking at the possible reuse of petroleum contaminated soil in cement and brick production². Presumably, radioactively contaminated soil could be also used in this production. Therefore, this is an additional reuse scenario that should be considered.

Statement of Work for Information on Recycles Soil Usage for Clearance (Phase II)

The staff have no comments on the Statement of Work.

Reused Soils Scenarios

1. Comments on the proposed approach for dose modeling.
 - The basis for arbitrarily increasing the volume of water for domestic uses (VDR) by a factor of 10 is unclear. We need to develop a good basis for this number considering that it will effect the amount of ground-water dilution.
 - The playground scenario needs to evaluate inadvertent soil ingestion to children.
 - If age-specific doses are pursued, all calculations should utilize the same set of dose conversion factors (e.g., all calculations use the dose conversion factors from ICRP Report 72).
 - As stated previously at the meetings, we support creating a category of scenarios based on cultural activities such as the eating of clay by the Creole (generally), Native American herbal medicine and rituals, etc. This would provide additional information to provide to the public and help increase public confidence.
2. Comments on type and volumes of soil used for small-scale construction.
 - The staff views it as premature to collect volumetric data on uses of soil when all of the scenarios have not been finished being developed.
3. Comments on soil geochemistry considerations.

¹Werner, D. and O. Henning, “Soil Mortar - A New Type of Backfilling Material for Narrow Conduit Trenches in the Gas and Water Distribution,” GWF Gas-Erdgas, 139(2): 112-119, February 1998.

²Rosenthal, S., G. Wolf, M. Avery, and J.H. Nash, “Potential Reuse of Petroleum-Contaminated Soil: A Directory of Permitted Recycling Facilities,” Foster Wheeler Enviresponse, Inc., Edison, NJ, Jan. 1992.

- The assumption that the release of radioactivity from the soil is controlled by adsorption seems to be a prudent approach for a generic analysis because it will generally result in a higher or more conservative estimate than other release mechanisms requiring more geochemical information. Therefore, there is no current need to account for soil geochemistry in determining leach rate and transport of radionuclides.
4. Comments on the dose modeling approach versus other approaches.
 - The approach being taken is appropriate for the purpose and is consistent with dose modeling, both internationally and nationally, including the Decommissioning Standard Review Plan.
 5. Comments on providing parameters and parameter distributions.
 - Identifying parameters and their distributions should only be undertaken after a reasonable set of scenarios and models (or computer codes) have been agreed upon.

Environmental Assessment Considerations

1. Comments on general NEPA considerations
 - As noted above, the staff believes that a broader set of scenarios looking at cultural activities will enhance the generic environmental impact statement.
 - As part of the risk-informed process, relative likelihood should be assessed for the various scenarios to avoid making final decisions on extreme conditions.
2. Comments on type of analysis vs. dose limit (0.1, 1, 10 mrem per year)
 - The scenarios and analyses should be similar for all of these dose limits because the dose limits are all small compared to the public dose limit. Consideration must be taken to make sure parameters and simplifying assumptions are selected appropriately to avoid situations where the analysis will be extremely more conservative for one limit versus another (0.1 mrem vs. 10 mrem).