



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
 WASHINGTON, D.C. 20555-0001

December 14, 1994

Dr. B. Rügger  
 Radiation Protection and Waste Management  
 OECD Nuclear Energy Agency  
 Le Seine-Germain  
 12, Boulevard des Îles  
 92130 Issy-les-Moulineaux France

Dear Dr. Rügger:

In your fax of November 14, 1994, you requested support for a proposal to establish within the NEA a Demonstration Project on Chemical Modelling of Sorption. I do support Level 1 of this proposal establishing a forum (or network) for exchange of information and experience. This effort could lead to more consistent methods in characterizing water-rock interactions, and more standardized approaches to reporting of pertinent parameters. However, while I generally endorse efforts to understand mechanisms of processes in a nuclear waste repository, I have some reservations about Level 2 of this proposal based on the following reasons:

- It is unclear that more accurate sorption coefficients determined as a function of solid surface and liquid solution characteristics will provide better estimates of radionuclide transport in heterogeneous, partially-saturated, fractured media.
- Depending upon the choice of the analog ions, investigations involving these ions may not provide the information required by the various participants. In this time of fiscal restraint, it may not be prudent to propose to examine ions that have not been identified as key to the various nuclear waste programs.
- The chemical space to be investigated has not been adequately mapped out in the proposal. Consequently it is unclear whether the participants will benefit from the effort.

In your letter of November 9, 1994, you requested my opinion on the usefulness of the proposed Sorption Data Information System (SDIS), and the amount of work needed for its development. I think that the database could prove useful to researchers and performance assessment analysts who are willing to go back to the original reports. A simple compilation of literature would require the user to carefully check original sources for application to his investigation. The amount of work needed to develop and maintain this database should be small as long as each participating country supplies its own sorption information.

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Finally, in addressing the questions in NEA/PAAG/DOC(24)2(paragraph 7), I have the following comments:

a) Source of information

I recommend that the sources of information can be varied; however, text books and annual reports may contain only those numbers which have been compiled or published in other media. A database containing information only from original documents, much of which may be difficult to access, would limit the usefulness of the database.

b) Scope

The scope of the database should be broad in order for it to be useful to all of the contributing countries. The database should include experimental data related to cultivated soils, because this information can be used by those involved in low-level as well as high-level waste disposal. Documents that describe studies of surface complexation parameters should be included in the database.

c) Level of effort from member countries

The level of effort in constructing this database should be small. However, participating countries must continue supplying updated information to keep the database useful.

d) Grey literature

I recommend grey literature not be included in the database, as this information may not be readily available to the database user.

I hope these recommendations are of use in deciding courses of action for the NEA. If you need more information, please contact me at 301-415-7855.

Sincerely,

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Margaret V. Federline, Chief  
Performance Assessment & Hydrology Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

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Finally, in addressing the questions in NEA/PAAG/DOC(24)2(paragraph 7), I have the following comments:

a) Source of Information

I recommend that the sources of information can be varied; however, text books and annual reports may contain only those numbers which have been compiled or published in other media. A database containing information only from original documents, much of which may be difficult to access, would limit the usefulness of the database. This would be particularly true if the database does not include the Kds.

b) Scope

The scope of the database should be broad in order for it to be useful to all of the contributing countries. The database should include experimental data related to cultivated soils, because this information can be used by those involved in low-level as well as high-level waste disposal. Documents that describe studies of surface complexation parameters should be included in the database. I recommend that all values including Kds be included in the database.

c) Level of Effort From Member Countries

The level of effort in constructing this database could be significant if it turns out to be more than a bibliography.

d) Grey Literature

The advantage of a sorption database would be to include data that have not been published for a variety of reasons. Unpublished work is not necessarily of lower quality than published work.

I hope these recommendations are of use in deciding courses of action for the NEA. If you need more information, please contact me at 301-415-7855.

Sincerely,

Margaret Federline, Chief  
Performance Assessment & Hydrology Branch  
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