HLWYM HEmails

From: Roberto Pabalan
Sent: Wednesday, September 15, 2004 11:39 AM
To: Budhi Sagar
Cc: GC_Group
Subject: RE:

Follow Up Flag: Follow up
Flag Status: Flagged

Budhi,

One CNWRA paper that evaluated the effect of coprecipitation on repository performance is that of Murphy and Codell (1999; MRS paper). Two alternate source term models for Yucca Mountain performance assessment were presented, one using spent fuel dissolution rate derived from Pena Blanca natural analog data, and another using radionuclide release rate based on the solubility of schoepite, a secondary uranium mineral (UO3.2H2O), as a
function of temperature and solution chemistry. Secondary uranium phases
are believed to control in large part radionuclide releases at Yucca Mountain because spent fuel is dynamically unstable in the oxidizing and hydrated environment of Yucca Mountain, as is evident in the alteration mineralogy observed at the Nopal I site. The calculated doses for the two models, calculated using the TPA version 3.2 code, were smaller than doses generated using the base case model. The alternate models are options in TPA 5.0.

The parameters used in the Murphy and Codell (1999) study have large uncertainties. For example, DOE published conflicting data with respect to the importance of neptunium uptake by secondary uranium phases. Murphy (2004; NWTRB presentation) recommended experiments to measure the equilibrium solubility of uranyl phases and to determine distribution coefficients for the uptake of neptunium and other radionuclides by secondary uranium phases. Such experiments involving uranium silicate minerals are being conducted by Jim Prikryl. Murphy (2004, NWTRB
presentation) also pointed to additional uncertainties that arise from kinetic effects—the uptake of trace radionuclides likely depends on the rate of growth or precipitation of the secondary phase. No data for the actinides is available on these kinetic effects, and would be useful to study.

Also potentially important is the uptake of radionuclides by iron oxides that precipitate subsequent to dissolution of the engineered barrier
(stainless steel) materials. Some literature data are available on uptake
of actinides by iron oxides through a sorption mechanism, but little information is available on coprecipitation effects.

For systems of interest to European repository programs, coprecipitation with calcite is of keen interest because the cements envisioned to be used in the repository systems, particularly low level and intermediate level wastes, could provide large sources of calcium for formation of calcite. A literature review on coprecipitation of radionuclides, with emphasis on calcite, was published by the Paul Scherrer Institute (Curti, 1997).

The bottom line: Coprecipitation data are presently inconclusive. The data are sparse and the data have not been fully developed. Thermodynamic and kinetic data would help improve performance assessment models. For NRC dose calculations, the base case model used in the TPA code is conservative.

--bobby

-----Original Message-----
From: Budhi Sagar [mailto:bsagar@cnwra.swri.edu]

Sent: Tuesday, September 14, 2004 11:01 AM
To: rpabalan@cnwra.swri.edu; epearcy@swri.edu
Cc: epearcy@swri.edu
Subject: RE:

Bobby,

Can you suggest one or two things that need to be done with respect to co-precipitation and solid solutions that may help to make PAs more realistic? In the GEOTRAP workshop, co-precipitation and solid solution were seen as delaying mechanisms that may or may not be included as part of the 'sorption' term in modeling.

The thermodynamic study will be coordinated by the NEA. Do any of you consider this to be important enough to participate?

Budhi

-----Original Message-----
From: R Pabalan [mailto:rpabalan@cnwra.swri.edu]
Sent: Tuesday, September 14, 2004 9:55 AM
To: bsagar@cnwra.swri.edu; epearcy@swri.edu
Subject: RE:

Budhi,

I am unaware of any CNWRA publication on the subject of coprecipitation and solid solution vis a vis PA.

bobby

-----Original Message-----
From: Budhi Sagar [mailto:bsagar@cnwra.swri.edu]
Sent: Friday, September 10, 2004 8:26 AM
To: epearcy@swri.edu; 'Roberto Pabalan'
Subject: FW:

English and Bobby,

Do we have any publication on the subject of coprecipitation and solid solution vis a vis PA? See below.

Budhi

-----Original Message-----
From: Jordi Bruno [mailto:jbruno@enviros.biz]
Sent: Friday, September 10, 2004 12:15 AM
To: bsagar@cnwra.swri.edu
Subject: RE:

Dear Budhi,

I hope you are well. The reason I'm writting to you is that I'm presently chairing an expert team of the NEA-TDB project with the objective to write Scientific Guidelines for the thermodynamic modelling of solid solutions. The team is constituted by Alex Navrotvsky, Dmitri Kulik, Dirk Bosbach and myself.

I remember that in the Geotrap workshop in Oskarsham you made a plea for the consideration of coprecipitation and solid solution formation in PA related reactive transport modelling. I would be interested if

you have further elaborated on this (in the form of publication) since I think it constitutes a compelling argument for the Guidelines we have to produce.
It would be nice of it could be quoted in the introductory part of the document.

Thanks forehand for your help

Best wishes

Jordi Bruno

-----Mensaje original-----
De: Budhi Sagar [mailto:bsagar@cnwra.swri.edu] Enviado el: lunes, 12 de julio de 2004 15:49
Para: 'Neil Chapman'; 'Wolfgang Kickmaier'; 'ARAO Slovenia'; 'Arius'; 'HSK Switzerland'; 'Posiva'; 'PURAM Hungary'; 'RAWRA'; 'RWMC'; 'SCK.CEN'; 'SKB'; 'University of Bern'; 'University of Manchester'; 'UPC Barcelona'; 'UP Valencia'; 'BfS'; 'British Geological Survey'; 'CRIEPI Japan'; 'ETH Zurich'; 'Geological Survey Japan'; 'GRI Switzerland'; 'Hazama Corporation'; 'IAE Japan'; 'IEAJ Japan'; 'JGC corporation'; 'JNC'; 'JNFL Ltd'; 'Kajima Corporation'; 'Nagoya University'; 'Nagoya University Museum'; 'Obayashi Corporation'; 'Paul Scherrer Institute'; 'Saitama University'; 'Shimizu Corporation'; 'SKI Sweden'; 'Solexperts CH'; 'SSI'; 'Taisei Corporation'; 'University of Fribourg'; 'University of Helsinki'; 'University of Leeds'; 'University of Michigan'; 'University of Rome'; 'University of Sheffield'
Asunto: RE: New Member

Dear Neil,

The CNWRA approves membership for EAWAG.

Budhi

-----Original Message-----
From: Neil Chapman [mailto:neil.chapman@itc-school.org]
Sent: Monday, July 12, 2004 5:21 AM
To: Wolfgang Kickmaier; ARAO Slovenia; Arius; HSK Switzerland; Posiva; PURAM Hungary; RAWRA; RWMC; SCK.CEN; SKB; University of Bern; University of Manchester; UPC Barcelona; 'UP Valencia'; 'BfS'; 'British Geological Survey'; 'CNWRA USA'; 'CRIEPI Japan'; 'ETH Zurich'; 'Geological Survey Japan'; 'GRI Switzerland'; 'Hazama Corporation'; 'IAE Japan'; 'IEAJ Japan'; 'JGC corporation'; 'JNC'; 'JNFL Ltd'; 'Kajima Corporation'; 'Nagoya University'; 'Nagoya University Museum'; 'Obayashi Corporation'; 'Paul Scherrer Institute'; 'Saitama University'; 'Shimizu Corporation'; 'SKI Sweden'; 'Solexperts CH'; 'SSI'; 'Taisei Corporation'; 'University of Fribourg'; 'University of Helsinki'; 'University of Leeds'; 'University of Michigan'; 'University of Rome'; 'University of Sheffield'
Subject: New Member

Dear ITC Members,

First, following our normal procedure, I would like to ask you to endorse the membership in ITC of the Swiss Federal Institute for Water Science and Technology (EAWAG), represented by the Department of Water Resources and Drinking Water (W&T). Please let me have your response by the 30th July.

I would also like to take the opportunity to update you on current activities. First, the workshop on radioactively contaminated land took place in May and attracted considerable interest. A record of the presentations and discussions has been submitted to EoS (the American Geophysical Union newspaper) and I attach the draft article for your information.

Arrangements are well in hand for the next two courses (on Siting of Repositories and on the Fundamentals of Geological Disposal) to be held in the Czech Republic and Switzerland, respectively. Please take a look at the

ITC website (www.itc-school.org) for details. Here, you will also find information about two of our 2005 courses (on Reactive Transport Modelling with the University of Bern and on Decision Making).

The EU FP6 CETRAD project, with ITC acting on the secretariat, is well underway and many ITC members are involved in the data gathering and will be involved in the assessment around the turn of the year.

Once again, please have a look at your ITC website, which is regularly updated with information.

Best regards for the summer months!

Neil

****

Professor Neil Chapman
Chairman
ITC School of Underground Waste Storage and Disposal Postfach Innertkirchen, CH-3862, Switzerland
Phone: +41-56-430-0838
Fax: +41-56-430-0839
neil.chapman@itc-school.org
www.itc-school.org
****

Hearing Identifier: HLW_YuccaMountain_Hold_EX
Email Number: 810

Mail Envelope Properties (003e01c49b3a$28fc0530$a9c8a281)

Subject: RE:
Sent Date: 9/15/2004 11:39:15 AM
Received Date: 9/15/2004 11:38:55 AM
From: Roberto Pabalan

Created By: rpabalan@cnwra.swri.edu

Recipients:
"GC_Group" <GC_Group@cnwra.swri.edu>
Tracking Status: None
"Budhi Sagar" <bsagar@cnwra.swri.edu>
Tracking Status: None

Post Office: cnwra.swri.edu

Files	**Size**	**Date & Time**
MESSAGE	8996	9/15/2004 11:38:55 AM

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received: Follow up