October 31, 2001

FY2002 EMSP VADOSE ZONE PRINCIPAL INVESTIGATOR WORKSHOP
NOVEMER 5-6, 2000

FINAL PROGRAM AGENDA

WR Wiley Environmental Molecular Sciences Laboratory
Pacific Northwest National Laboratory, Richland, WA

MONDAY, NOVEMBER 5

8:00 - 8:30 Registration – EMSL Lobby

EMSL AUDITORIUM

Introduction

8:30 - 8:35 Commence Workshop (John Zachara, PNNL)

8:35 - 8:50 Welcome from the Groundwater Vadose Zone Integration Team (John Morse, DOE; Mike Graham, BHI; Mark Freshley, PNNL)

8:50 - 9:20 Status and Directions of the EMSP program (Mark Gilbertson, DOE-HQ)

- Perceptions of vadose zone-Hanford EMSP experiment
- Measures of success
- Research continuity and how to carry on

9:20 - 9:30 Objectives of Workshop (Chet Miller, DOE-HQ)

Update on Hanford Vadose Zone Activities

9:30 - 10:15 **I. Tank Farm Characterization Studies** (Tony Knepp, CHG)

- BX-102/B-110
- T/TX/TY

10:15 - 10:30 **II. 200 Area Soil Sites** (Mary Todd, BHI)

- TW-1/TW-2
- 200 Area soil sites

10:30 - 10:45 *BREAK*

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10:45 - 11:00 **III. Hanford Site Science Issues** (Mike Thompson, DOE-RL)

Scientific Program [20 minute presentations by each P.I with 10 minutes of question/answer will focus on scientific results and accomplishments, with emphasis on implications to contaminant migration in the vadose zone, potential remedial strategies, and long term stewardship/monitoring. Future research targets for the remainder of FY 02 should be identified as well as anticipated final products of project research. Each P.I. is requested to submit an electronic 2-4 page status document, with figures, that can be incorporated into a report on EMSP Vadose Zone research.]

I. GEOCHEMISTRY

(John Zachara to preside)

11:00 - 11:30 Project 70163, Andy Felmy, "The Aqueous Thermodynamics and Complexation Reactions of Anionic Silica Species to High Concentration: Effects on Neutralization of Leaked Tank Wastes and Migration of Radionuclides in the Subsurface"

11:30 - 12:00 Project 70070, Kathryn Nagy, "Reactivity of Primary Soil Minerals and Secondary Precipitates Beneath Leaking Hanford Waste Tanks"

12:00 - 1:00 *LUNCH* [A over-lunch discussion will be held on the findings of the S-SX tank farm study recently summarized in a field investigation report (FIR) submitted to DOE and regulators and how EMSP research contributed to that evaluation]

I. GEOCHEMISTRY (Cont'd)

1:00 - 1:30 Project 70081, Sam Traina, "Immobilization of Radionuclides in the Hanford Vadose Zone by Incorporation in Solid Phases"

1:30 - 2:00 Project 70126, Jon Chorover, "Collaboration: Interfacial Soil Chemistry of Radionuclides in the Unsaturated Zone"

2:00 - 2:30 Project 73758, John Zachara (Chongxuan Liu to present), "Fixation Mechanisms and Desorption Rates of Sorbed Cs in High Level Waste Contaminated Subsurface Sediments: Implications to Future Behavior and In-Ground Stability"

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2:30 - 3:00	Susan Carroll and Carl Steefel, "Hanford Science and Technology Program: Reaction Transport Experiments Investigating the Migration of ^{137}Cs in Sediments Beneath the Hanford SX Tank Farm"
3:00 - 3:15	*BREAK*
3:15 - 3:45	Project 70146, Richard Reeder, "Spectroscopic and Microscopic Characterization of Contaminant Uptake and Retention by Carbonates in Soils and Vadose Zone Sediments"
3:45 - 4:15	Project 70121, Scott Chambers (Tim Droubay to present), "The Influence of Calcium Carbonate Grain Coatings on Contaminant Reactivity in Vadose Zone Sediments"
4:15 - 4:45	Project 70177, Nancy Hess and Jim Szecsody, "Technetium Attenuation in the Vadose Zone: Role of Mineral Interactions"
4:45 - 5:15	Project 70176, Heino Nitsche (Kirk Cantrell to present), "Transuranic Interfacial Reaction Studies on Manganese Oxide Hydroxide Mineral Surfaces"
5:15	*ADJOURN FOR THE DAY*

TUESDAY, NOVEMBER 6

Scientific Program (Cont'd)

II. WATER AND WASTE MIGRATION
(Glendon Gee to preside)

8:00 - 8:30	Project 70193, Chris Murray, "Influence of Clastic Dikes on Vertical Migration of Contaminants in the Vadose Zone at Hanford"
8:30 - 9:00	Project 70135, Markus Flury, "Colloid-Facilitated Transport of Radionuclides Through the Vadose Zone"

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9:00 - 9:30	Project 73775, Jiamin Wan, "Colloid Genesis/Transport and Flow Pathway Alterations Resulting from Interactions of Highly Reactive Waste Solutions and Sediments in the Hanford Vadose Zone"
9:30 - 10:00	Project 70108, Patricia Berge, "Effects of Fluid Distribution on Measured Geophysical Properties for Partially Saturated, Shallow Subsurface Conditions"
10:00 - 10:15	*BREAK*
10:15 - 10:45	Project 70219, Philip Jardine, "Fate and Transport of Radionuclides Beneath the Hanford Tank-Farms: Unraveling Coupled Geochemical and Hydrological Processes in the Vadose Zone"
10:45 - 11:15	Project 73773, Don DePaolo, "Isotopic Tracers for Waste Fluid Tracking and Fluid-Soil Interactions: Hanford, Washington"
11:15 - 11:45	Project 70149, Charles Carrigan, "The Dynamics of Vadose Zone Transport: A Field and Modeling Study Using the Vadose Zone Observatory"
11:45 - 12:45	*LUNCH* [An over-lunch discussion period will be held on scientific opportunities afforded by FY02 coring activities through metal waste and B-plant waste plumes in the T-TX-TY tank farms. The known chemical characteristics of the released waste streams will be reviewed as well as the chemical constituents expected to be present as basis for identifying scientific questions that could be resolved by study of the core materials.

II. WATER AND WASTE MIGRATION (Cont'd)

1:00 - 1:30	Project 65410, Andy Ward, "Rapid Migration of Radionuclides Leaked from High-Level Waste Tanks: A Study of Salinity Gradients, Wetted path Geometry and Water Vapor Transport"
1:30 - 2:00	Project 70187, Philip Meyer (Mark Rockhold to present), "Quantifying Vadose Zone Flow and Transport Uncertainties Using a Unified, Hierarchical Approach"

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2:00 - 2:30	Project 70220, Greg Newman, "High Frequency Electromagnetic Impedance Imaging for Vadose Zone and Groundwater Characterization"
2:30 - 3:00	Project 70267, David Alumbaugh (Douglas LaBrecque to present), "A Hydrologic-Geophysical Method for Characterizing Flow and Transport Processes within the Vadose Zone"
3:00 - 3:15	*BREAK*
3:15 - 3:45	Project 70115, Rosemary Knight, "The Use of Radar Methods to Determine Moisture Content in the Vadose Zone"
3:45 - 5:00	**Concluding Discussions and Issues** [The group will discuss how to best maintain the continuity of the research, potential routes for application of new results and models at Hanford and elsewhere, and how to best summarize the results and findings of each project for potential users through the DOE complex] • Sample acquisition and collaboration opportunities at Hanford • Renewal Issues • Application of research results to Hanford (e.g., corrective and remedial action assessments) • Follow on work support by others (Hanford, SCFA) • Scientific summary of FY 99 Vadose Zone Program
5:00	*ADJOURN*