Curriculum Vitae

GARY P. CURTIS

CONTACT INFORMATION:

Water Resources Division
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EDUCATION:

1979 B.S. Civil Engineering, Lehigh University

1981 M.S. Environmental Engineering and Sciences, Stanford University

1985 Engineer, Environmental Engineering and Sciences, Stanford University

1991 Ph.D., Environmental Engineering and Sciences, Stanford University

PROFESSIONAL EXPERIENCE:

1991 to present: Hydrologist, Water Resources Division, USGS, Menlo Park, CA

1979-1981: Consulting Engineer, Metcalf and Eddy, Boston, MA.

RESEARCH INTERESTS:

Reactive Contaminant Transport: Development, application and field-testing of conceptual models of reactive transport in groundwater.

Biogeochemical Processes: Testing thermodynamic-kinetic models of enhanced microbially mediated reductive dechlorination in a fractured rock aquifer.

Uncertainty Analyses: Evaluation of the scale-dependence of parametric and conceptual model uncertainty for scales ranging from the laboratory to field scales.

PROFESSIONAL ACTIVITIES:

Co-Chair, Working Group on Subsurface Reactive Transport Modeling, Federal Interagency Committee on Multimedia Environmental Models, April 2009-present.

Proposal Review Panel Member, DOE Transuranic Science Focus Area Program, Lansdowne, VA, April 2009.

Member, Working Group on Uncertainty Analysis and Parameter Estimation, Federal Interagency Committee on Multimedia Environmental Models, 2005-2009.

Advisor for Jacob Birkett, University of Wisconsin, USGS-National Association of Geoscience Teachers Cooperative Field Training Program Internship, May-August, 2008.

Guest Lecturer, Stanford University, Department of Earth Science, 2 lectures in 2006 and 2008.

Proposal Review for DOE Environmental Remediation Sciences Program 2004.

Member, Fundamental Scales Panel at Computational Subsurface Sciences Workshop, DOE Office of Advanced Scientific Computing, January 9-12, 2007, Bethesda, MD.

Member, Working Group on Subsurface Reactive Transport Modeling, Federal Interagency Committee on Multimedia Environmental Models 2003-2006. Published synthesis article: Davis, et al., 2004, EOS, Assessing conceptual models for subsurface reactive transport of inorganic contaminants, 85, 449-455.

Guest Lecturer, Stanford University, Department of Civil and Environmental Engineering, 11 presentations between 1992 and 2005.

Mentor, Anker L. Højberg, a visiting PhD student from Technical University of Denmark, Lyngby, Denmark, from February to July, 1999.

Task Leader, Review of the transport of selected radionuclides at the Radioactive Waste Management Complex, Idaho National Engineering and Environmental Laboratory, Idaho, 1998-1999.

Reviewer for Water Resources Research, Geochimica et Cosmochimica Acta, Environmental Science and Technology, Applied Geochemistry, Ground Water, and Computers and Geosciences.

AWARDS AND RECOGNITION:

2009 Invited Presentation, Application of a surface complexation modeling approach to simulate U(VI) adsorption and desorption in a heterogeneous contaminated aquifer, American Chemical Society, National Meeting, Salt Lake City, UT.

2008 Citation for excellence in reviewing, Ground Water.

2005 Invited Presentation, Reactive Transport of Uranium(VI) Migration at the Naturita Site, Conceptual Model Development and Reactive Transport Modeling for the 300 Area Uranium Plume in 300-FF-5, Pacific Northwest National Lab, Hanford, WA.

2004 Invited Speaker, Application of Surface Complexation Modeling to Describe Uranium(VI) Adsorption and Retardation at the Field Scale, International Workshop on Conceptual Model Development for Subsurface Reactive Transport Modeling of Inorganic Contaminants, Radionuclides, and Nutrients, Albuquerque, NM.

2001 Invited Speaker, Reactive Biogeochemical Transport Modeling of ground water contamination at a crude oil spill site. Geological Society of America, Annual Meeting, Reno, NV.

1998 STAR Award, USGS.

1992 Invited Speaker, Application of a Diffusion-Reaction Model to Describe the Reductive Dehalogenation of Hexachloroethane by Borden Aquifer Sand. Presented at the Goldschmidt Conference, Reston, VA.

1992 Graduate Student Award in Environmental Chemistry, American Chemical Society.

1978 Tau Beta Pi

1978 Chi Epsilon

PUBLICATIONS

Refereed Articles

Curtis, G.P., Fox, P.M., Kohler, M., Davis J.A., Reactive transport of U(VI) in small scale tracer tests: comparison of observations with model predictions, (in review).

Curtis, G.P., Kohler, M., Davis, J.A. Comparing Approaches for Simulating the Reactive Transport of U(VI) in Ground Water, 2009, Mine Water and the Environment, 28:84-93.

Kent, D.B., Davis, J.A., Joye, J.L., Curtis, G.P., 2008, Influence of variable chemical conditions on EDTA-enhanced transport of metal ions in mildly acidic groundwater, Environmental Pollution, 153(1):44-52.

Cygan, R.T., Stevens, C.T., Puls, R.W., Yabusaki, S.B., Wauchope, R.D., McGrath, C.J., Curtis, G.P., Siegel, M.D., Veblen, L.A., Turner, D.R., 2007, Research activities at U.S. government agencies in subsurface reactive transport modeling, Vadose Zone Journal, 6 (4):805-822.

Davis, J.A., Curtis, G.P., Wilkins, M.J., Kohler, M., Fox, P.M., Naftz, D.L., and Lloyd, J.R., 2006, Processes affecting transport of uranium in a suboxic aquifer: Physics and Chemistry of the Earth, 31:548-555.

Curtis, G.P., Davis, J.A., and Naftz, D.L., 2006, Simulation of reactive transport of uranium(VI) in groundwater with variable chemical conditions: Water Resources Research, v. 42, no. 4, W04404, doi: 10.1029/2005WR003979.

Amirbahman, A., Kent, D.B., Curtis, G.P., and Davis, J.A., 2006, Kinetics of sorption and abiotic oxidation of arsenic(III) by aquifer materials: Geochimica et Cosmochimica Acta, 70: 533-547.

Bekins, B. A., Cozzarelli, I.M., and Curtis, G.P., 2005, A simple method for calculating growth rates of petroleum hydrocarbon plumes: Ground Water, 43:817-826.

Davis, J.A., Yabusaki, S.B., Steefel, C.I., Zachara, J.M., Curtis, G.P., Redden, G.P., Criscenti, L.J., and Honeyman, B.D., 2004, Assessing Conceptual Models for Subsurface Reactive Transport of Inorganic Contaminants: EOS, 85(44): 449 and 455.

Davis, J.A., Meece, D.E., Kohler, M., and Curtis, G.P., 2004, Approaches to surface complexation modeling of uranium(VI) adsorption on aquifer sediments: Geochimica et Cosmochimica Acta, 68:3,621-3,641.

Curtis, G.P., Fox, P., Kohler, M., and Davis, J.A., 2004, Comparison of in situ uranium K_d values with a laboratory determined surface complexation model: Applied Geochemistry, 19:1,643-1,653.

Kohler, M., Curtis, G.P.,Meece, D.E., and Davis, J.A., 2004, Methods for estimating adsorbed uranium(VI) and distribution coefficients in contaminated sediments, Environ.Sci.Technol., 34:240-247.

Curtis, G.P., 2003. Comparison of approaches for simulating reactive solute transport involving organic degradation reactions by multiple terminal electron acceptors, Computers in Geosciences, 18(3):319-329.

Kohler, M., Curtis, G. P.; Kent, D. B., and Davis, J. A., 1996, Experimental investigation and modeling of uranium(VI) transport under variable chemical conditions. Water Resources Research, 32(12):3539-3552.

Curtis, G.P. and M. Reinhard, 1993. Reductive dehalogenation of hexachloroethane, carbon tetrachloride and bromoform by anthrahydroquinone disulfonate and humic acid. Environmental Science and Technology. 28(12):2393-2401.

Powell, R.M., Bledsoe, B.E., Curtis, G.P. and Johnson, R.M., 1989, Interlaboratory methods comparison for the total organic carbon analysis of aquifer material: Environmental Science and Technology. 23(10):1246-1251.

Curtis, G.P., Roberts, P.V., and Reinhard, M., 1986, A natural gradient experiment on solute transport in a sand aquifer: IV. Sorption of organic solutes and its influence on mobility: Water Resources Research. 22(13):2059-2067.

Book Chapters

Curtis, G.P., and Davis, J.A., 2004, Simulation of U(VI) transport in groundwater with variable geochemical conditions, *in* Wanty, R.B., and Seal, R.R., II, eds., Water-Rock Interaction, Proceedings of the Eleventh International Symposium on Water-Rock Interaction, Saratoga Springs, New York, July 2004: New York, A.A. Balkema, v. 2, p. 927-933.

Reinhard, M., Curtis, G.P., and Barbash, J.E., 1997. Natural chemical attenuation of halogenated hydrocarbon compounds via dehalogenation. In: C.H.Ward, J.A.Cherry and M.R. Scalf, eds, Subsurface Restoration. Ann Arbor Press, Chelsea, MI., p 397-409.

Ball, W.P., Curtis, G.P., and Roberts, P.V., 1997. Physical/Chemical Processes affecting the subsurface fate and transport of synthetic organic materials. In: C.H.Ward, J.A.Cherry and M.R. Scalf, eds, Subsurface Restoration. Ann Arbor Press, Chelsea, MI., p 27-58.

Curtis, G.P., Reinhard, M., and Roberts, P.V., 1986, Sorption of hydrophobic organic compounds by sediments. in: J.A. Davis and K.F.Hayes, eds., Geochemical Processes at Mineral Surfaces. ACS Symposium Series 323, American Chemical Society, Washington D.C., p. 191-216.

Technical Reports

Davis, J.A. and G.P. Curtis, 2007, Consideration of Geochemical Issues in Groundwater Report NUREG CR-6870, U.S. Nuclear Regulatory Commission, Rockville, MD, 150 p.

Curtis, G.P. and Davis, J.A., 2006, Tests of Uranium(VI) Adsorption Models in a Field Setting, Report NUREG CR-6911, U.S. Nuclear Regulatory Commission, Rockville, MD, 99 p.

Curtis, G.P., 2005, Documentation and Applications of the Reactive Geochemical Transport Model RATEQ, Report NUREG CR-6871, U.S. Nuclear Regulatory Commission, Rockville, MD, 97 p.

Rousseau, J.P., Landa, E.R., Nimmo, J.R., Cecil, L.D., Knobel, L.L., Glynn, P.D., Kwicklis, E.M., Curtis, G.P., Stollenwerk, K.G., Anderson, S.R., Bartholomay, R.C., Bossong, C.R., and Orr, B.R., 2005, Review of the transport of selected radionuclides in the interim risk assessment for the Radioactive Waste Management Complex, Waste Area Group 7 Operable Unit 7-13/14, Idaho National Engineering and Environmental Laboratory, Idaho: U.S. Geological Survey Scientific Investigations Report 2005-5026, 283 p. in 2 volumes.

Davis, J.A., and Curtis, G.P., 2003, Application of Surface Complexation Modeling to Describe Uranium(VI) Adsorption and Retardation at the Uranium Mill Tailings Site at Naturita, Colorado: US Nuclear Regulatory Commission, NUREG/CR-6708, 238p.

Curtis, G.P., Cozzarelli, I.M., Baedecker, M.J., Bekins, B.A., 1999. Coupled biogeochemical modeling of ground water contamination at the Bemidji, Minnesota, crude oil spill site, in Morganwalp, D.W., and Buxton, H.T., eds., U.S. Geological Survey Toxic Substances Hydrology Program--Proceedings of the Technical Meeting, Charleston, South Carolina, March 8-12, 1999--Volume 3 of 3--Subsurface Contamination from Point Sources: U.S. Geological Survey Water-Resources Investigations Report 99-4018C, p. 153-158.