

Future Options for Management in the Nation's Subsurface Remediation Effort

Committee

Michael C. Kavanaugh

Chair

MICHAEL KAVANAUGH, Chair, is a Vice President and a Global Science and Technology Leader at Malcolm Pirnie, Inc. Dr. Kavanaugh's primary areas of expertise include hazardous waste management with a particular focus on groundwater remediation, risk and decision analysis, water quality, water treatment, potable and non-potable water reuse, and fate and transport of chemical contaminants in the environment. Dr. Kavanaugh has served on numerous National Research Council boards and committees, chairing both the Water Science and Technology Board and the Board on Radioactive Waste Management. He is also a Consulting Professor in the Department of Civil and Environmental Engineering at Stanford University. Dr. Kavanaugh received a B.S. in Chemical Engineering from Stanford University, and an M.S. in Chemical Engineering and a Ph.D. in Civil/Sanitary Engineering from University of California, Berkeley.

William M. Arnold

Member

WILLIAM M. ARNOLD is an Associate Professor and the Joseph T. and Rose S. Ling Professor at the University of Minnesota's Department of Civil Engineering. He specializes in the fate and transport of anthropogenic organic chemicals (solvents, pesticides, and pharmaceuticals) in natural and engineered aquatic systems. In particular, he studies diffusion, mass transfer, and partitioning processes and how knowledge of these processes can be used to develop containment/remediation schemes. Dr Arnold is familiar with subsurface remediation techniques such as zero valent metals, phytoremediation, surfactants, reactive membranes, and sediment capping. He received a B.S. in chemical engineering from MIT, an M.S. in chemical engineering from Yale, and a Ph.D. in environmental engineering from the Johns Hopkins University.

Barbara Beck

Member

BARBARA D. BECK is a principal at Gradient Corporation. She is an expert in toxicology and in human health risk assessment for environmental chemicals, especially metals and air pollutants, and is the author of over 100 book chapters and journal articles on these topics. Dr. Beck directs Gradient's toxicology and risk assessment practice and has performed site-specific and chemical-specific risk assessments across the country, as well having developed exposure and risk assessment methodologies. Before joining Gradient, she was Chief of the Air Toxics Staff for U.S. EPA Region I. Prior to that she was a Fellow in the Interdisciplinary Programs in Health at the Harvard School of Public Health. Dr. Beck received her A.B. in biology from Bryan Mawr College and Ph.D. in hydrogeology from Tufts University.

Yu-Ping Chin

Member

YU-PING CHIN is Professor and Division Chair of Global and Environmental Change for the Department of Geological Sciences at The Ohio State University. Prior to joining The Ohio State University, Dr. Chin conducted research at the Swiss Federal Institute of Environmental Science and Technology on photochemical cycling in lacustrine systems and at the Ralph M. Parsons Laboratory at MIT on the properties of organic humic materials in marine and lacustrine porewaters and on the fluxes of particle reactive contaminants across the sediment/water interface. He is a specialist in zero valent metals, natural attenuation, reactive barriers, and surfactant and co solvent behavior in the subsurface. He is a current member of the Water Science and Technology Board. Dr. Chin received his A.B in geology from Columbia University, and his M.S. and Ph.D. in Aquatic Chemistry from the University of Michigan.

Zaid Chowdhury

Member

ZAID CHOWDHURY is a vice president of Malcolm Pirnie, Inc., in Phoenix, Arizona. He has an extensive background in water treatment processes and is involved in all advanced drinking water process evaluations performed by the company. He has an in-depth understanding of water treatment processes such as coagulation/flocculation, media filtration, membrane filtration, biological treatment of drinking water, and granular activated carbon adsorption. Dr. Chowdhury has managed many high profile projects including the development of the water treatment plant simulation model which he also incorporated into the Surface Water Analytical Tool (SWAT) for the regulatory development of the D/DBP Rule by the EPA. During his tenure at Malcolm Pirnie, he has managed numerous water quality evaluations involving bench-, and pilot-scale studies for alternative treatment processes and the development of information needs for capital improvement programs for water utilities. He received his B.S. in Civil Engineering from the Bangladesh University of Engineering & Technology and his M.S. and Ph.D. in Civil Engineering from the University of Arizona.

David E. Ellis

Member

DAVID ELLIS Ph.D., P.G. is a Principal Consultant in DuPont's Corporate Remediation Group in Wilmington, Delaware. He has 30 years experience in the science of subsurface cleanups. Dave leads the remediation technology and science program for the DuPont Corporate Remediation Group. He is Chair of the Sustainable Remediation Forum (SURF) and Chair of the UK's SABRE consortium on bioremediation of chlorinated solvent source areas. He served on two National Research Council committees - natural attenuation and source removal. Dave was very active in ITRC, serving both on the Board of Advisors and a lead instructor in several ITRC classes. He received his Ph.D. at Yale University in 1978, was a research faculty member at the University of Chicago and has published over 30 papers on environmental technology, geochemistry, and high temperature thermodynamics.

Tissa H. Illangasekare

Member

TISSA H. ILLANGASEKARE is a Professor and AMAX Chair of Environmental Science and Engineering in the Division of Environmental Science and Engineering at the Colorado School of Mines and the Director of the University/Industry/National Laboratory collaborative Center for the Experimental Study of Subsurface Environmental Processes. Professor Illangasekare has 30 years of experience with numerical modeling of saturated and unsaturated flow in soils, surface-subsurface interaction, arid-zone hydrology, integrated modeling of hydrologic systems, subsurface chemical transport and multiphase flow, and environmental impacts of energy development. He served on the NRC Committee on Subsurface Contamination at Department of Energy (DOE) Complex Sites: Research Needs and Opportunities, an important precursor to this activity. Dr. Illangasekare received a Ph.D. in Civil Engineering from Colorado State University, a M.E. from the Asian Institute of Technology, and a B.S. from University of Ceylon, Sri Lanka.

Paul C. Johnson

Member

PAUL C. JOHNSON is a Professor in the Department of Civil and Environmental Engineering and is also the Executive Dean of the Ira A. Fulton School of Engineering at Arizona State University. Prior to joining ASU in 1994 he was a Senior Research Engineer at the Shell Oil Westhollow Technology Center. His teaching, research, and professional activities focus on the application of contaminant fate and transport fundamentals to subsurface remediation and risk assessment problems. Dr. Johnson is recognized for contributions to the fields of soil and groundwater remediation and risk assessment; more specifically, the design, monitoring, and optimization of soil and groundwater remediation systems and the monitoring and modeling of exposure pathways. Dr. Johnson is also the editor-in-chief for the National Ground Water Association's journal Ground Water Monitoring and Remediation. He received a B.S. from the University of California, Davis, and his M.A. and Ph.D. in Chemical Engineering from Princeton University.

Mohsen Mehran

Member

MOHSEN MEHRAN is a principal hydrologist with Rubicon Engineering Corporation. He has been the principal investigator and manager for Remedial Investigation/Feasibility Studies; RCRA Facility Investigations, risk assessment; and design, installation, and operation of remediation systems. He has developed and applied numerous computer models to solve groundwater flow problems and investigate the migration of various chemical compounds in fractured/porous media - e.g., petroleum compounds, hexavalent chromium and other metals, chlorinated solvents, herbicides, volatile organic compounds, and numerous other chemicals. He has applied this technical specialty to site characterization, evaluation of remedial alternatives, development of cleanup criteria, and allocation of cost among potentially responsible parties for the aerospace, petroleum, electronics, chemical, wood preserving, and communications industries. Dr. Mehran holds a B.S. from Tehran University, and a M.S. and Ph.D. from the University of California, Davis.

James W. Mercer

Member

JAMES W. MERCER is a hydrogeologist and executive vice president of GeoTrans, Inc. Dr. Mercer has more than 35 years of experience specializing in all phases of geohydrologic transport analysis including groundwater flow, heat, and solute transport in porous media for a wide range of applications such as aquifer resource analysis, aquifer thermal storage, geothermal energy development, radioactive waste storage, seawater intrusion, and hazardous waste characterization and remediation, especially dense non-aqueous phase liquids. Dr. Mercer frequently provides expert technical review, expert witness testimony, litigation support and regulatory compliance services for clients throughout the United States and internationally. Previously a hydrologist with the U.S. Geological Survey's Water Resources Division, he has served on an advisory panel on national ground water contamination for the Office of Technology Assessment and on National Research Council committees on groundwater contamination and groundwater models. He received his B.S. in geology from Florida State University, and his M.S. and Ph.D. in geology from the University of Illinois.

Kurt D. Pennell

Member

KURT D. PENNELL is a Professor and Chair at the Department of Civil and Environmental Engineering at Tufts University. His research interests include fate and transport of engineered nanomaterials and non-aqueous phase liquids in the subsurface; development and testing of in situ remediation technologies including thermal treatment, surfactant flushing and bioremediation; and the relationship between chronic exposure to persistent organic pollutants and human health; oxidative stress and neurodegenerative disease. He serves as an Associate Editor of the Journal of Contaminant Hydrology. Dr. Pennell received a B.S. from the University of Maine, an M.S. from North Carolina State University, and a Ph.D. from the University of Florida.

Alan J. Rabideau

Member

ALAN J. RABIDEAU is a Professor of Civil, Structural, and Environmental Engineering at the State University of New York at Buffalo. Dr. Rabideau's primary research interests include mathematical modeling of flow and reactive contaminant transport in groundwater, subsurface remediation, and decision and risk analysis for environmental systems. He was a co-recipient of the 2001 American Society of Civil Engineers' Rudolf Hering medal for the best paper in environmental engineering, and recipient of the 2004 Brigham Award for outstanding service from the New York Water Environment Association. Dr. Rabideau received his B.S. in Civil Engineering from the University of Notre Dame, M Eng. in Civil Engineering from the State University of New York at Buffalo, and Ph.D. in Environmental Sciences and Engineering from the University of North Carolina at Chapel Hill.

Allen M. Shapiro

Member

ALLEN M. SHAPIRO is currently a Senior Research Hydrologist with the National Research Program of the U.S. Geological Survey in Reston, VA. His research focuses on the development of field techniques and methods to integrate and interpret geologic, geophysical, hydraulic, and geochemical information in order to characterize fluid and chemical transport in fractured rock over dimensions from meters to kilometers. His research has been applied to issues of water supply, geotechnical engineering, waste isolation, and groundwater contamination and restoration, including the fate of dense non-aqueous phase liquids (DNAPLs) and transport of pathogens in fractured rock. Dr. Shapiro is the Principal Investigator in research to investigate the fate of DNAPLs in fractured sedimentary rock at the former Naval Air Warfare Center in West Trenton, NJ. In 2004, the National Ground Water Association selected Dr. Shapiro as the 2004 Distinguished Darcy Lecturer. He received a B.S. in civil engineering from Lafayette College, M.S., M.A., and Ph.D. in civil and geological engineering from Princeton University.

Leonard M. Siegel

Member

LEONARD M. SIEGEL is director of the Center for Public Environmental Oversight (CPEO), a project of the Pacific Studies Center that facilitates public participation in the oversight of military environmental programs, federal facilities cleanup, and brownfield revitalization. He is one of the environmental movement's leading experts on military facility contamination, community oversight of cleanup, and the vapor intrusion pathway. For his organization he runs two Internet newsgroups: the Military Environmental Forum and the Brownfields Internet Forum. He is a member of the Interstate Technology and Regulatory Council's Permeable Reactive Barrier Work Team, the Department of Toxic Substances Control (California) External Advisory Group, and the Moffett Field (formerly Moffett Naval Air Station) Restoration Advisory Board. He has also served on several committees of the National Research Council, most recently as a member of the Committee on Review of Secondary Waste Disposal and Regulatory Requirements for the Assembled Chemical Weapons Alternatives Program.

William J. Walsh

Member

WILLIAM J, WALSH is an attorney in the Washington, D.C., office of Pepper Hamilton LLP. Prior to joining Pepper, he was section chief in the EPA Office of Enforcement. His legal experience includes environmental regulatory advice and advocacy and defense of environmental injury litigation involving a broad spectrum of issues pursuant to a variety of environmental statutes, including the Resources Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA). Mr. Walsh holds a J.D. from George Washington University Law School and a B.S. in physics from Manhattan College. He represents trade associations, including the Rubber Manufacturers Association and the American Dental Association, in rule-making and other public policy advocacy. He has negotiated proactive, yet cost-effective remedies in pollution cases involving water, air, and hazardous waste; and advised technology developers and users on taking advantage of the incentives for, and eliminating the regulatory barriers to, the use of innovative environmental technologies. Mr. Walsh has also served on the following: Committee on Review and Evaluation of International Technologies for the Destruction of Non-Stockpile Chemical Material; Committee on Review and Assessment of the Army Non-Stockpile Chemical Demilitarization Program; Pine Bluff; Committee for Review and Assessment of the Army Non-Stockpile Chemical Demilitarization Program Workplace Monitoring; Committee for the Review and Evaluation of the Army Non-Stockpile Chemical Material Disposal Program; and the Committee on Ground Water Cleanup Alternatives.