

**Invitation for Comment on Short List of Candidates for the
Metals Risk Assessment Framework Review Panel Of the
EPA Science Advisory Board**

The EPA Science Advisory Board (SAB) Staff Office announced in a *Federal Register* Notice (Volume 69, Number 145; Pages 45314-45315) that it was forming a panel to conduct a peer review of EPA's Framework for Metals Risk Assessment. To form the panel, the SAB Staff Office sought public nominations of individuals with expertise in: environmental chemistry of metals, environmental fate and transport of metals, bioavailability of metals, routes of exposure of aquatic and terrestrial species to metals, routes of human exposure to metals, human health effects of exposure to metals, and ecological effects of exposure to metals. Background information on the project and details on the nomination process appeared in the cited notice. The notice is available on the SAB Website at www.epa.gov/sab/.

The SAB Staff Office has received 27 nominations of individuals in response to the request. Based on qualifications, interest, and availability of the nominees, the SAB Staff Office identified the "Short List" of nominees. Brief biographical sketches of candidates on the "Short List" are listed below for comment. We welcome information, analysis or documentation for the Staff Office to consider in evaluating the "Short List" candidates.

The SAB Staff Office Director, in consultation with SAB leadership, as appropriate, makes the final decision about who will serve on the panel in the "Panel Selection" phase of this process. In that phase, the SAB Staff completes its review of information regarding conflict of interest, possible appearance of impartiality, and appropriate balance and breadth of expertise needed to address the charge. Staff reviews all information provided by candidates, along with any information that the public may provide in response to the posting of information about the prospective panel on the SAB Web site during the "Short List" phase and information gathered by SAB Staff independently on the background of each candidate.

Please provide any comments you may have with respect to the "Short List" candidates, no later than October 11, 2004. Please make your comments to the attention of Dr. Thomas Armitage, Designated Federal Officer. Emailing comments (armitage.thomas@epa.gov) is the preferred mode of receipt.

[NOTICE: THE COMMENT PERIOD HAS BEEN EXTENDED TO NOVEMBER 5, 2004]

Metals Risk Assessment Framework Review Panel Nominee Short List

Rick Cardwell

Dr. Rick Cardwell is a senior scientist with Parametrix Environmental Research Laboratory in Albany, Oregon. He holds a B.S. in Fisheries from Oregon State University, and M.S. and Ph.D. degrees in from the University of Washington, where he studied the toxicity of stress and diesel oil toxicity on aquatic life. He has 37 years of experience studying the fate and effects of pollutants on freshwater and marine aquatic ecosystems. Over the past 20 years, he has specialized in risk assessment, especially in studying the fate and toxicology of metals and mining wastes in the environment. A special focus has been on accounting for the bioavailability of the various metal species found in different environmental compartments, including surface waters, groundwaters, sediments, and tissues of plant and animal prey. He has worked on these issues throughout the U.S. and internationally. He was an early pioneer in the development of aquatic ecological risk assessment methodologies, and has served as either a peer reviewer or member of science advisory panels to EPA and the states of Oregon and Washington. For example, he peer reviewed EPA's risk assessment framework and served on EPA's national review of perchlorate. Currently, he is a member of the Oregon Dept. of Environmental Quality's Technical Advisory Committee concerning development of State sediment quality standards. In addition, he served as a peer reviewer of EPA water quality criteria documents for cadmium, copper, methyl tertiary butyl ether, perchlorate, and tributyltin.

John Consolvo

Mr. John Consolvo is the analytical chemist in charge of overseeing the collection, processing, analysis, and review of quality control of environmental samples for metals analysis at the Philadelphia Water Department's Bureau of Laboratory Services. Mr. Consolvo has an MS in chemistry from Old Dominion University. His research focused on aquatic trace metal complexation and speciation. At the Philadelphia Water Department Mr. Consolvo is currently involved in research to assess the fate-and-transport of metals in the urban watershed and an American Water Works Association Research Foundation (AwwaRF) funded project on the Occurrence of Manganese in Drinking Water. Mr. Consolvo is a member of the American Water Works Association's (AWWA) Inorganic Contaminants Committee and a PAC member on an AwwaRF project studying the formation of hydrazine as a possible byproduct of chloramination. Mr. Consolvo served on the AwwaRF Unsolicited Proposal Review Committee in 2003.

Max Costa

Dr. Max Costa is Professor and Chairman of the Department of Environmental Medicine, Director of the Nelson Institute of Environmental Medicine, Deputy Director NYU Cancer Institute, Professor of Pharmacology, Department of Pharmacology at New York University School of Medicine. Dr. Costa has been working in the area of molecular mechanisms of nickel and chromium carcinogenesis. In the late 1980s, Dr. Costa discovered that nickel compounds could silence genes by increasing DNA methylation and proposed an epigenetic mechanism of nickel carcinogenesis involving hypermethylation of genes and their silencing. Dr. Costa continues to investigate the molecular mechanisms by which nickel compounds produce gene silencing by inhibiting histone acetylation and inducing DNA methylation. Dr. Costa has received numerous awards including the Young Environmental Scientist Award from NIEHS; the Kenneth Morgareidge Award from the International Life Sciences Institute; Burroughs Wellcome Visiting Professor in the Basic Sciences and Distinguished Scientist Speaker, NIH. He has served on the study sections and panels, such as Toxicology Study Section (1991-1995); Ad Hoc NIH Chemical Pathology Study Section (1997); ALT Toxicology I Study Section (1997); US EPA Scientific Peer Review Panel (1984-1992); University of California Tobacco-Related Disease Study Section (1991-1997). Dr. Costa has been Session Chairman and invited speaker to over 100 symposia and conferences and an invited lecturer to over 60 universities. He has currently published 240 articles in peer-reviewed journals and books. He has served on many Editorial Boards including Editor, Environmental Carcinogenesis, Chemosphere (1981-1983); Editor, Biology of Metals (1988-1990); Associate Editor, Cell Biology and Toxicology (1987-present); Editorial Board, Biological Trace Element Research (1988-present); Editor-in-Chief, Molecular Toxicology (1989-1991); Editorial Board, BioMetals 1992-present); Editor, Journal of Pharmacology and Experimental Therapeutics (1992-1994); Editorial Advisory Board, Toxicology and Applied Pharmacology (1996-present); Board of Associate Editors, Environmental Health Perspectives (1996-present); Editorial Board, NIEHS Environmental Health Perspectives (1997-present). He has served on national and international committees including the IUPAC Subcommittee on Environmental Services and Occupational Toxicology of Nickel (1979-present); American Association for Cancer Research Program Committee (1989); IARC International Working Group on Metals and Their Compounds, Lyon, France (1989); Member of the Board of Directors for Cancergrams and Oncology Overviews (1987-1989); Reviewer for the Agency for Toxic Substances and Disease Registry "Toxicology Profiles" (1985-present); Member of the ICOH Scientific Committee on the Toxicology of Metals (1988-present); Member of the Organizing Committee for the International Association of Environmental Analytical Chemistry (1990- present); Vice President-Elect, Vice President, President, Past President; Society of Toxicology-Metals Specialty Section (1993-1996); Member of the Organizing Committee for the 6th International Symposium on Metal Ions in Biology and Medicine, San Juan, Puerto Rico (2000). He organized the First (1988), Second (1993), and Third (2001) International Meeting on Molecular Mechanisms of Metal Toxicity and Carcinogenicity. Dr. Costa obtained his Ph.D. in 1976 from the University of Arizona Medical School, Tucson, AZ, and his B.S. in 1974 from Georgetown University, Washington, DC. Dr. Costa has had several grants from NIH/ NIEHS. Within the last ten years, he has also had funding from NIH/NCI and the U.S. EPA.

David Dzombak

Dr. David A. Dzombak is a Professor of Civil and Environmental Engineering at Carnegie Mellon University, a registered Professional Engineer in Pennsylvania, and a Diplomate of the American Academy of Environmental Engineers. He holds a Ph.D. in Civil-Environmental Engineering from the Massachusetts Institute of Technology. The emphasis of his research is on water and soil quality engineering, especially the fate and transport of chemicals in subsurface systems and sediments, wastewater treatment, in situ and ex situ soil/sediment treatment, hazardous waste site remediation, and abandoned mine drainage remediation. Dr. Dzombak has served on the National Research Council Committee on Bioavailability of Contaminants in Soils and Sediments, and on various research review panels for the Department of Defense, Environmental Protection Agency, National Institute of Environmental Health Sciences, and National Science Foundation. He has also served on the Board of Directors and as an Officer of the Association of Environmental Engineering and Science Professors; as chair of committees for the American Academy of Environmental Engineers, American Society of Civil Engineers, and Water Environment Federation; and on advisory committees for various community and local government organizations, and for the Commonwealth of Pennsylvania. Dr. Dzombak was elected a Fellow of the American Society of Civil Engineers in 2002. Other recent awards and honors include an Aldo Leopold Leadership Program Fellowship by the Ecological Society of America and The David and Lucile Packard Foundation in 2000, the Professional Research Award from the Water Environment Association of Pennsylvania in 2002, the Jack Edward McKee Medal from the Water Environment Foundation in 2000, and a Distinguished Service Award from the Association of Environmental Engineering and Science Professors in 1999. (11/2003)

Robert Edstrom

Dr. Robert Edstrom is the Minnesota Department of Transportation Chief Toxicologist. He has a Bachelor of Arts degree in biology from St. Cloud State University, a Masters of Science in environmental chemistry from the College of William and Mary, and a Ph.D. in chemical oceanography from the School of Marine Science of the College of William and Mary. Dr. Edstrom specializes in the measurement of toxic chemicals as well as their fate and transport in the environment. Dr. Edstrom's current research areas support the Minnesota Department of Transportation in studying the fate, effects, and transport of metals from treated wood structures, the metals and organics in coal combustion by-products, de-icing chemicals, and new procedures for evaluating the environmental hazards associated with road construction products.

Kevin Farley

Dr. Kevin J. Farley is a Professor of Civil and Environmental Engineering at Manhattan College. He received his B.E. in Civil Engineering and his M.E. in Environmental Engineering from Manhattan College, and his Ph.D. in Civil-Environmental Engineering from the Massachusetts Institute of Technology. His research focuses on the fate and bioaccumulation of toxic chemicals in surface waters and sediment. Current projects include studies on the speciation and cycling of arsenic in lakes and reservoirs (NIEHS/EPA Superfund Basic Research Program), the development of a "unit world" model for metals in aquatic environments (EPA Center for Metals in the Environment), and contaminant fate and bioaccumulation modeling of PCBs, dioxins, and mercury New York Harbor sediment and biota (Hudson River Foundation). Dr. Farley has served on the National Research Council Committee on Remediation of PCB-Contaminated Sediments, on EPA scientific review panels for the Chesapeake Bay Eutrophication Model, the Lake Michigan Mass Balance Modeling Study, and the Hudson River PCB Superfund Reassessment Study, and on expert panels for the American Geological Institute and the Delaware River Basin Commission. Dr. Farley also serves as a consultant for HydroQual, Inc., is a co-director of the Manhattan College Institute of Water Pollution Control, and is a recipient of the American Society of Civil Engineers Wesley W. Horner Award.

Ivan Fernandez

Dr. Ivan Fernandez, is a professor and forest soils scientist at the University of Maine, Orono. He chairs the Department of Plant, Soil, and Environmental Sciences. His expertise is in nutrient and metal cycling in forested ecosystems, particularly in soil biogeochemical responses to ecosystem disturbance. He publishes regularly in professional journals on a multi-media range of subjects pertaining to forest ecology including soil biogeochemistry, fire ecology, nutrient cycling in soil and water, watershed processes and soil microbial ecology. He has also published numerous technical reports, book chapters, and a book. He is a member of numerous professional organizations such as the Society of American Foresters, Soil Science Society of America, National Association of Environmental Professionals and the Soil and Water Conservation Society to name a few. He serves as a member of the national Council of Soil Science Examiners, the Maine Board of Certification for Professional Geologists and Soil Scientists, and is responsible for oversight of the long-term whole ecosystem research program at the Bear Brook Watershed in Maine. His research interests are in atmospheric deposition and climate change effects on forested ecosystems and watershed processes, as well as the ecological impact of residuals utilization in forests. Current research projects include studies of long-term watershed acidification, base cation depletion, nitrogen saturation, municipal residuals utilization in forests, and the effects of fire and climate on mercury and nitrogen dynamics. His advanced degrees are in soil chemistry and forest resources from the University of Maine.

Bruce Fowler

Dr. Bruce Fowler is Assistant Director for Science, Division of Toxicology, Agency for Toxic Substances and Disease Registry. Dr. Fowler holds a B.S. degree in Fisheries (Marine Biology) from the University of Washington in 1968 and a Ph.D. in Pathology from the University of Oregon Medical School in 1972. He was a staff scientist at the National Institute of Environmental Health Sciences from 1972 until 1987 when he became the first Director of the University of Maryland System-wide Program in Toxicology and Professor of Pathology at the University of Maryland School of Medicine. In 2001, he became Professor and Director of the Laboratory of Cellular and Molecular Toxicology in the Department of Epidemiology at the University of Maryland School of Medicine. From 2002 – 2003 he was a Senior Research Advisor to the Agency for Toxic Substances and Diseases Registry (ATSDR) in the Division of Toxicology. He was appointed as the Assistant Director for Science in the Division of Toxicology and to the Senior Biomedical Research Service (PHS) at ATSDR in November 2003. Dr. Fowler, who is an internationally recognized expert on the toxicology of metals has served on a number of State, National and International Committees in his areas of expertise. These include the Maryland Governor's Council on Toxic Substances (Chair), National Academy of Sciences / National Research Council Committees on Toxicology, Toxicology Information Committee, Committee on Women in Science and Engineering, Measuring Lead in Critical Populations (Chair), Biological Markers of Urinary Toxicology, Committee on the Evaluation of Augmenting Potable Water Supplies with Reclaimed Water, and the Subcommittee on Arsenic in Drinking Water of the Committee on Toxicology. He has also served as a temporary advisor to the World Health Organization (WHO) and the International Agency for Research Against Cancer (IARC). Dr Fowler has been honored as a Fellow of the Japanese Society for the Promotion of Science (1990), a Fulbright Scholar and Swedish Medical Research Council Visiting Professor at the Karolinska Institute, Stockholm, Sweden (1994 - 1995) and elected as a Fellow of the Academy of Toxicological Sciences (2000). He served as Chairman of the Scientific Committee on the Toxicology of Metals under the International Commission on Occupational Health (ICOH) 1996-2002, as a consultant to the USEPA Science Advisory Board and a member of the Fulbright Scholarship review committee for Scandinavia (1999-, Chair, 2000-2001). He is a member of the AAAS Recruitment and Screening Committee for the Court Appointed Scientific Experts (CASE) Demonstration Project 2000. Dr. Fowler is the author of over 200 research papers and book chapters dealing with molecular mechanisms of metal toxicity and biomarkers for early detection of metal-induced cell injury. He has been the editor or co-editor of 5 books or monographs on metal toxicology and mechanisms of chemical – induced cell injury. His current research is focused on the toxicology of chemical mixtures involving metals, particularly in relation to semiconductors, lead, cadmium, arsenic mixtures and the role(s) of lead – binding proteins in mediating the toxicity of this ubiquitous metal to the kidney and brain. He serves on the editorial boards of a number of scientific journals in toxicology and environmental health. Dr. Fowler has received peer-reviewed research funding from the EPA STAR Grant Program and the National Institutes of Health.

Andrew J. Friedland

Dr. Andrew J. Friedland is Professor and Chair of the Environmental Studies Program at Dartmouth College. His research has focused on understanding the effects of atmospheric deposition of pollutants on elemental cycling processes in high-elevation forests of New England and the Northeastern United States. He has examined the processes and behavior of trace elements such as lead, copper, zinc, nickel and cadmium and major elements such as nitrogen and calcium on vegetation, soils and water. In a number of related projects, he has described the decline of red spruce in the mountains of New England and has examined water relations in conifers during winter. More recently, Dr. Friedland has begun to explore the role of individual action and personal choice in relation to energy consumption and environmental impact. Friedland has published 48 peer-reviewed articles on these topics and many more conference proceedings and other papers. He has written one book, co-authored with biology professor Carol Folt, *Writing Successful Science Proposals* (Yale University Press, 2000). Dr. Friedland has received funding from the National Science Foundation, the US Forest Service, the Environmental Protection Agency and private foundations. Dr. Friedland has taught introductory and advanced environmental science courses as well as soil science, forest biogeochemistry and an interdisciplinary course on science and literature. He was a member of the Citizens Advisory Panel of the Strategy for Vermont's Third Century, an environmental risk assessment program conducted by the State of Vermont and the U.S. EPA. From 1995-1998, he chaired the College Board Advanced Placement Environmental Science development committee. This committee designed the first Advanced Placement course in environmental science that was offered nationwide for the first time in 1998. Approximately 25,000 students took the most recent AP Environmental Science exam earlier in 2002. Dr. Friedland is a member of the Soil Science Society of America, the Ecological Society of America and the American Association for the Advancement of Science. He is currently on the editorial board of the *Journal of Sustainable Forestry* and recently left the editorial board of *Science of the Total Environment*. In 2002 and 2003, Dr. Friedland was a member of the Metals Assessment Panel of the EPA Scientific Advisory Board. Friedland has B.A.s in Biology and Environmental Studies (double major) (1981) and a Ph.D. in Geology (1985), all from the University of Pennsylvania

John Froines

Dr. John Froines is Director of the University of California at Los Angeles (UCLA) Program in Occupational and Environmental Health and he is Associate Director of the NIEHS Southern California Environmental Health Sciences Center. Dr. Froines received his B.S. in Chemistry from the University of California at Berkeley in 1963. He received his M.S. (in 1964) and Ph.D. (in 1966) in Physical-Organic Chemistry from Yale University. Dr. Froines was a NIH postdoctoral fellow with Nobel Laureate, Sir George Porter at the Royal Institution of Great Britain. From 1974 to 1977, he was the Director of the Occupational and Radiological Health Division of the Vermont Department of Health and the Director of Occupational Lung Disease at the Vermont Lung Center. Dr. Froines was the Director of Toxic Substances Standards at Occupational Safety and Health Administration from 1977 to 1979. From 1979 to 1981, he was the Deputy Director of the National Institute of Occupational Safety and Health. In 1981, Dr. Froines was recruited to the UCLA School of Public Health and from 1991 to 1998 he was the Chair of the Department of Environmental Health Sciences. Dr. Froines is the chairman of the California's Scientific Review Panel where he is charged with reviewing data on proposed toxic air contaminants to ensure the appropriate applications of science and risk assessment. As the Director of the UCLA Center for Occupational and Environmental Health, Dr. Froines leads a multidisciplinary Center comprised of the UCLA schools of Public Health, Medicine, and Nursing. Dr. Froines' air pollution related research includes the health effects of particulate matter in the ambient environment, lung cancer and non-cancer health effects attributable to air pollution, and the biochemical mechanism of the carcinogenicity of toxic air contaminants, just to name a few. He directs the Southern California Particle Center and Supersite, a major research center devoted to studying the effects of particulate matter on human health. Dr. Froines is Director of the NIH Fogarty's UCLA Program in Occupational and Environmental Health and he is Associate Director of the NIEHS Southern California Environmental Health Sciences Center. In addition to his research on air pollution he has conducted research on the carcinogenicity of arsenic, beryllium and chromium during the past decade. In the former case he has focused on the genetic determinants of the mechanism of arsenic related systemic cancers. He has conducted extensive research on pesticide exposure in Mexico. He has served on the National Toxicology Board of Scientific Counselors as Chair of the Carcinogen Subcommittee. Dr. Froines has received numerous honors including recent citations for his contributions from the Governor and the head of CAL/EPA.

A. Jay Gandolfi

Dr. A. Jay Gandolfi is the Assistant Dean for Research and Graduate Studies for the College of Pharmacy at the University of Arizona. He is also Chair for the Department of Pharmaceutical Sciences as well as the Director of the NIH-sponsored Superfund Hazardous Waste Research Program at the University of Arizona. Dr Gandolfi received his Ph.D. in Biochemistry with a minor in Toxicology from Oregon State University in 1972. This was followed by a Research Fellowship studying volatile halogenated hydrocarbons toxicity at the Mayo Clinic. After three years in inhalation toxicology research with Battelle Pacific Northwest Laboratories, in 1978 Dr. Gandolfi joined the faculty of the University of Arizona with appointments in Pharmacology, Toxicology, and Anesthesiology. Dr. Gandolfi has received grants for research to investigate metal-metal interactions in the kidney, the study of arsenic in biology and medicine, and the investigation of agricultural chemicals as a major non-point source of arsenic. His publications include articles on: interaction of metals during their uptake and accumulation in renal tissue, use of the nuclear microprobe for the study of heavy metal deposition in rabbit renal tissue, arsenate induced gene expression, metabolism of inorganic arsenic, gallium arsenide, and arsine, arsenic drinking water exposure and urinary excretion, selenium and selenomethoione levels in prostate cancer patients. He has served on research review committees for federal organizations (NIH, VA, EPA) and various national or private foundations. He has been on the Editorial Board for 8 toxicology journals. Dr. Gandolfi has been very active with the Society of Toxicology, holding numerous elected and appointed offices. Dr. Gandolfi's research has focused on three areas: aliphatic halocarbon fate and toxicity, in vitro systems for toxicological evaluations, and renal toxicity. His research has been continuously funded by federal, foundation, and industrial support. Dr. Gandolfi has published almost 250 experimental papers in both basic science and medical journals. He has published 12 book chapters and is co-Editor-in-Chief of *Comprehensive Toxicology*, a 13 volume review of the broad field of toxicology.

Joshua Hamilton

Dr. Joshua Hamilton is a molecular toxicologist at Dartmouth College. He has been at Dartmouth since 1985 and is currently a Professor of Pharmacology and Toxicology at Dartmouth Medical School and an Adjunct Professor of Chemistry at Dartmouth College of Arts and Sciences. Dr. Hamilton is the Director of Dartmouth's Center for Environmental Health Sciences and directs two of its federally funded interdisciplinary program projects. He is also Director of Dartmouth's Molecular Biology and Proteomics Core Facility. Dr. Hamilton received a M.S. in genetics and a Ph.D. in toxicology from Cornell University. His current research interests are primarily in the areas of molecular toxicology and toxicogenomics, focusing in particular on the effects of toxic metals and other environmental agents of concern in the environment on gene expression, and the role of such changes in adverse health effects. Dr. Hamilton's laboratory recently discovered that arsenic can act as a potent endocrine disruptor, blocking steroid hormone mediated signaling at very low doses relevant to U.S. drinking water exposures. He has also done extensive research on mechanisms of chemical carcinogenesis working with arsenic and other metals as well as with organic chemicals such as polycyclic aromatic hydrocarbons, dioxins, PCBs and other persistent organic contaminants. A new collaborative project is applying genomic tools to develop molecular biomarkers for examining effects of toxic metals and other environmental chemicals on aquatic food webs. Dr. Hamilton has published extensively in the scientific literature on these and other research results from his laboratory. He is a member of the Society of Toxicology, the American Association for Cancer Research, the American Chemical Society, and the American Association for the Advancement of Science. He is a regular reviewer for over three dozen journals and has served as an Associate Editor on several journals including Toxicology and Applied Pharmacology and Chemico-Biological Interactions. He has served as a reviewer for several different NIH study sections and has served as Chair of a special review panel for NIEHS. He is an external reviewer for several university centers or interdisciplinary programs at other universities. Dr. Hamilton was an external reviewer for the National Research Council's recent report, Arsenic in Drinking Water, 2001 Update. He has served as Chair of Dartmouth's Radiation Safety and Environmental Health and Safety Committees. He was a member of New Hampshire's Healthy People 2010 Committee evaluating the role of environmental agents in human health, and is a member of the State of New Hampshire's Biomonitoring Council as well as the City of Manchester NH's Environmental and Public Health Leadership Council. He is also a founding member of the New Hampshire Arsenic Consortium, composed of scientists from Dartmouth, the State of New Hampshire, the U.S. Geological Survey and the U.S. EPA working together on arsenic as a public health problem in the northeast. Dr. Hamilton is currently the Principal Investigator and Director of Dartmouth's NIH-NIEHS Superfund Basic Research Program Project grant on toxic metals, and also directs a multi-institutional NSF Biocomplexity grant on Daphnia toxicogenomics. He is an Associate Director of Dartmouth's NIH COBRE program project grant on lung pathobiology. He is also a Co-Investigator or collaborator on several other individual research grants from NIH.

Kim Hayes

Dr. Kim Hayes is Professor and Program Director of the Environmental and Water Resources Engineering Program in the Department of Civil and Environmental Engineering at the University of Michigan. Professor Hayes' research focuses on the effects of interfacial properties on transport and transformation processes of environmental contaminants. Dr. Hayes has more than 20 years of experience in conducting experiments on the sorption of heavy metal ions and radionuclides to soil and sediment mineral constituents. His recent research activities include surface spectroscopic investigations of metal ion sorption reactions; impact of trace metal sorption processes on organic pollutant transformation rates; reductive dechlorination by reduced mineral surfaces in anaerobic environments, investigation of nanostructured particles for remediation of metal contaminated groundwaters, sequestration of metals in the subsurface through precipitation and sorption processes; and the study of binders and barriers materials for nuclear waste containment. Support for this work has been provided by the Environmental Protection Agency, the National Science Foundation, Department of Energy, and National Institute for Environmental Health Sciences. Professor Hayes has served as a reviewer of a National Research Council report on the "Bioavailability of Contaminants in Soils and Sediments." He recently served as a member of a peer-review panel for the Strategic Environmental Research and Development Program (SERDP) to evaluate proposals on "In-Situ merits of Sequestration Enhancement and Engineered Bioavailability Reduction of Metals in Soils." He has also participated on a variety other workshops and review panels for the Environmental Protection Agency, National Science Foundation, and Department of Energy related to metal ion speciation, sequestration and mobility. Professor Hayes is currently a member of the Board of Director's and an Executive Officer of the Association of Environmental Engineering and Science Professors as well as a member of the Technical Advisory Board of the Great Lakes Protection Fund for the state of Michigan. Professor Hayes has more than 100 publications in peer-reviewed manuscripts, book chapters, technical reports, and proceedings detailing work on environmental chemistry and interfacial processes for contaminant remediation. Professor Hayes was awarded a National Science Foundation Presidential Young Investigator Award earlier in his career (1989-1994). His research group has been selected 4 times for American Chemical Society Environmental Chemistry paper awards (1992, 1996, 1997, 1999). Professor Hayes obtained his BS degree in Chemistry (1980), MSE in Environmental Engineering (1980), MSE Chemical Engineering (1982), a Ph.D. in Environmental Engineering (1987), all from Stanford University.

Robert Hudson

Dr. Robert J.M. Hudson is an Associate Professor in the Department of Natural Resources and Environmental Sciences at the University of Illinois at Urbana-Champaign. Dr. Hudson has been actively involved in environmental research, education, and service since earning his Bachelor of Science degrees in Chemistry and Chemical Engineering from the University of California at Santa Barbara in 1979. In his first professional position as an engineer at Tetra Tech, Inc., he was responsible for developing the biogeochemistry module of the ILWAS Acid Rain Model under the direction of Mr. Steven Gherini. Next, he undertook doctoral studies in Civil and Environmental Engineering at the Massachusetts Institute of Technology. For his dissertation research with Professor Francois Morel, he conducted novel investigations which demonstrated that coordination kinetics control the bioavailability of iron during uptake by phytoplankton. This led directly to his present research interest in the bioavailability and speciation of trace metals. During his postdoctoral research, conducted both at the University of California at Santa Cruz with Professor Kenneth Bruland and at Tetra Tech, Dr. Hudson was responsible for developing biogeochemical models that simulated: i) the cycling and bioaccumulation of mercury in lakes and ii) the global cycling of mercury and of carbon. Dr. Hudson is now an Associate Professor in the Department of Natural Resources and Environmental Sciences at the University of Illinois at Urbana-Champaign. At the University of Illinois, he has begun two new major directions in his research. The first is developing advanced empirical modeling approaches for analyzing trace metal speciation data from field studies. This approach permits both extant and new data to be analyzed in ways that overcome recently-identified, serious problems in calibrating the current state of the art analytical methods, CLE-CSV in particular. It also permits accurate estimates of the uncertainties in speciation measurements to be made. The second is a new method for analyzing methylmercury based on ion chromatography of mercury complexes and detection with cold vapor atomic fluorescence spectrometry. This nearly-completed method has the same sensitivity and selectivity as the current standard method based on gas chromatography, but has the advantage of being automatable. Since moving to Illinois, he has also begun investigating the coupling of trace metal and major nutrient biogeochemistry in rural watersheds. At present, he is focusing on watershed-scale studies of mercury and manganese in streams. At different points in his career, Dr. Hudson has emphasized either: i) conducting field and experimental studies of biogeochemical processes or ii) modeling biogeochemical processes. His current approach to research emphasizes studies that require bringing both together. Data are analyzed using sophisticated statistical methods, such as inverse modeling, multidimensional optimization, and non-linear regression, and models are used to assist in designing field studies. Dr. Hudson has received research funding from the USDA, the Illinois Council on Food and Agricultural Research, the USGS, the National Great Rivers Research and Educational Center in Brighton, IL, and the Illinois-Indiana Sea Grant College program.

Margaret Karagas

Dr. Margaret Karagas is a professor in the Department of Community and Family Medicine at the Dartmouth Medical School. Dr. Karagas is an epidemiologist with specific expertise in the conduct of complex, interdisciplinary investigations of environmental exposures, biomarkers, and host-susceptibility. She has been principal investigator on 13 NIH grants over the past 10 years, and co-investigator on numerous others. One of her major research interests is the epidemiology of arsenic and other toxic metals. The level at which arsenic poses a cancer risk has been a topic of considerable debate. Her study represents one of the first U.S. efforts to evaluate cancer risk on an individual level (versus using the ecologic measures typical of international studies). Dr. Karagas identified accurate exposure assessment as a critical element for studies determining the relationship between low-level arsenic exposure and cancer risk, and published several papers evaluating alternative biomarkers of arsenic exposure. Dr. Karagas also has a particular research focus on skin cancer. Many environmental carcinogens and gene-environment interactions were first discovered by their link to skin cancer either in the occupational or clinical setting, including ionizing radiation, non-ionizing radiation, polycyclic aromatic hydrocarbons, chronic immunosuppression, arsenic. In 1993, Dr. Karagas established a collaborative network of dermatologists and pathologists throughout New Hampshire to develop one of the few population-based registries and case-control studies for non-melanoma skin cancer in the world. Through this work, she has acquired a large, highly unique archive of blood and tissue samples from which to conduct collaborative, population-based molecular-genetic and proteomic investigations. In another NIH-funded study, Dr. Karagas has been investigating the potential effects of female sex steroids on women's risk of melanoma skin cancer. The study involves the collaboration of 15 investigators from six different countries. Additionally, Dr. Karagas has conducted investigations of drinking water fluoride and fracture risk, and maternal smoking and congenital anomalies. More recently she has been involved in an international study of risk factors for extremely low birth weight infants with members of the Vermont Oxford Network. Dr. Karagas also was part of the investigative team of a study of disseminated BCG (Bacille Calmette-Guerin) among children in Zambia. She also recently completed a biomarker study of toxic metal exposure in children and adults living near a gold mine in Siuna, Nicaragua. Currently, she is working with investigators from Thailand and the US on a toxicogenomic study of multiple exposures including arsenic among pregnant women and newborns.

Thomas La Point

Dr. Thomas La Point directs the Institute of Applied Sciences at the University of North Texas and is a Professor in the Department of Biological Sciences. He received his Ph.D. from the Department of Biological Sciences at Idaho State University in Aquatic Biology. His primary research and teaching interests include contaminant effects on freshwater aquatic communities, specifically how metals and organic contaminants affect benthic population dynamics and freshwater fisheries. He has published on ecosystem measures, contaminant bioaccumulation, and sub-lethal effects on aquatic populations. Dr. La Point has served on several USEPA Science Advisory panels concerned with pesticides and ecological risk and has worked as a consultant on Superfund issues at large sites. Dr. La Point is presently serving on a National Academy of Science NRC Committee on Superfund Site Assessment and Remediation in the Coeur d'Alene River Basin. He is serving as Chair of a Water Environment Research Foundation subcommittee on whole-effluent testing as an indicator of aquatic health. He has served on several NSF, USEPA and USGS panels to review proposals submitted for funding. He is on the editorial board for Chemosphere and Environmental Toxicology and Pharmacology and has served as Editor of the Society of Environmental Toxicology and Chemistry (SETAC) Special Publication Series. Dr. La Point's current research is funded by the NSF, USEPA and the City of Denton, TX.

Leonard Levin

Dr. Leonard Levin is Technical Leader and Program Manager in Air Toxics Health and Risk Assessment at the Electric Power Research Institute (EPRI). He holds a B.S. in Earth, Atmospheric and Planetary Sciences from the Massachusetts Institute of Technology, an M.S. in Atmospheric Sciences from the University of Washington, and a Ph.D. from the Institute for Fluid Dynamics and Applied Mathematics from the University of Maryland. His research interests and expertise deal with environmental modeling, air and environmental quality, human exposure, risk assessment, and atmospheric physics and circulation. Dr. Levin has served on EPA Peer Review Panels, including those for the Mercury Study Report to Congress, the Mercury Research Strategy, and the Air Toxics Research Strategy, and for the American Chemistry Council, on multimedia studies. He has served on the U.S. Department of Energy panel on multimedia modeling for hazardous waste mitigation; curriculum committee, Environmental Management program, University of California at Berkeley. Dr. Levin has developed simulation models for atmospheric circulation at the global scale; for mercury emissions and transport at regional scale; and for microscale turbulence transfer to water surfaces. He serves and has served as project manager on modeling efforts for mercury and other trace substances at local and continental scale, and in model verification studies for atmospheric chemistry and deposition processes. Dr. Levin's financial support is from EPRI operating funds, which originate with member institutions and special project funders (including private and public corporations, international energy organizations, and U.S. government agencies).

Samuel Luoma

Dr. Samuel N. Luoma is a Senior Research Hydrologist with the US Geological Survey and served as the first Lead Scientist for the CALFED Bay-Delta program between August 2000 and November 2003. As Lead Scientist he helped establish peer review, approaches to using scientific experts as advisors, a broad system of new studies relevant to CALFED, and improved the credibility and clarity of the science CALFED uses in its decisions. He is broadly interested in California water issues, ecosystem restoration and in improving uses of science in water policy decisions. His research interests include the effects of pollutants in aquatic environments, with special emphasis on metals. The studies he and his project have conducted are available in leading publications and recognized as among the leaders in fields such as metal bioavailability, dietary exposure of aquatic organisms to metals, determination of metal effects at the individual, population and community level in field studies; evaluation of methods like AVS/SEM for their usefulness in regulatory arenas; tolerance of aquatic organisms to metals and fundamental aspects of metal effects in nature. He has worked in San Francisco Bay since 1974 and has authored more than 180 peer-reviewed publications. He wrote the textbook, Introduction to Environmental Issues, in 1984. He was editor of Marine Environmental Research from 1996 – 2003 and is an editorial advisor for the Marine Ecology Progress Series. He is a Fellow in the American Association for the Advancement of Science and was awarded the U. S. Department of Interior's Distinguished Service Award in 1986. He has participated nationally and internationally as an expert or advisor, including advising the USEPA's Science Advisory Board on sediment quality criteria and the NAS/National Research Council's Committee on the Bioavailability of Contaminants in Soils and Sediments. He was one of four people who originally designed USGS' successful National Water Quality Monitoring Assessment. He has advised and mentored students and postdoctoral associates from Asia, Europe, Latin America and North America. He is presently serving as a William J. Fulbright Distinguished Scholar studying "International approaches to applying best available science in water pollution issues" in collaboration with colleagues at the Natural History Museum in London.

Glenn Miller

Dr. Glenn C. Miller is a Professor of Natural Resources and Environmental Science at the University of Nevada, Reno (UNR). He is also the Director of the Graduate Program in Environmental Sciences and Health at UNR. He has a B.S. in Chemistry from the University of California, Santa Barbara and a Ph.D. in Agricultural and Environmental Chemistry (1977) from the University of California at Davis. Following graduate studies, he spent a year of postdoctoral study at the EPA's Environmental Research Laboratory in Athens, Georgia and has been at UNR since 1978. Current areas of research include acid mine remediation using anaerobic sulfate reducing systems, closure of precious metals heaps, and precious metals pit water quality. In the recent past he has examined emissions from marine engines into Lake Tahoe and the associated risks with those emissions. He teaches courses in Environmental Toxicology, Risk Assessment and Environmental Chemistry. He is a member of the American Chemical Society, SETAC, AAAS and Sigma Xi. He has also been active on policy issues related to mining and is a member of the Board of Directors of EarthWorks and Great Basin Mine Watch. Service on other advisory committees and professional societies include, among others: National Academy of Science committee on mining technology, 2000-2002; National Academy of Science committee on USGS Mineral Resources Program, 2000-2003; and U.S. Environmental Protection Agency Advisory Committee on Mining Waste, 1991-1993. Recent grants include: U.S. EPA funded study of "Mercury Deposition Associated with Mining", National Science Foundation funded study of trifluoroacetic acid in Antarctic ice, and a Placer Dome Corporation funded study of passivation of acid generating rock at the Golden Sunlight Mine.

Robin Reash

Mr. Robin J. (Rob) Reash is Principal Environmental Scientist, American Electric Power, Water and Ecological Resource Services, Columbus, Ohio. Mr. Reash's education includes: B.A., Biology (*cum laude*), Wittenberg University, 1981 Marine Biology and Oceanography, Duke University Marine Laboratory, 1981; M.S., Environmental Biology, The Ohio State University, 1984. Mr. Reash's work experience includes: Environmental Consultant, 1984; Fisheries Intern, Ohio Environmental Protection Agency, 1984; Aquatic Biologist, American Electric Power, 1984-1988; Environmental Scientist, Oklahoma Water Resources Board, 1989; Principal Environmental Scientist, American Electric Power, 1990 to present. Mr. Reash's current activities include: Board member, Ohio Valley Chapter, Society of Environmental Toxicology and Chemistry; Water Environment Research Foundation, Steering Committee chairman for "Validation of Underlying Assumptions for Integrating Frequency, Magnitude, and Duration in NPDES Permit Conditions", 2001 to present; Water Environment Research Foundation, Steering Committee member for "Bioassessment: a tool for managing urban aquatic life uses", 2000 to present; Leader, Utility Water Act Group selenium workgroup; Member, steering group for SETAC book on environmental indicators of reduced mercury emissions from combustion sources; Member, peer review group for ORSANCO temperature water quality criteria re-evaluation; Manuscript reviewer, *Environmental Toxicology and Chemistry*, 1999 to present; Manuscript reviewer, *Ecotoxicology and Environmental Safety*, 2004. Mr. Reash's current research projects include: Assessment of atmospheric deposition/bioaccumulation of mercury and other trace metals in a common lichen species (*Flavoparmelia caperata*) collected near coal-fired power plants; Assessment of mercury concentrations in Ohio River fish compared to modeled deposition patterns; Toxicity Identification valuation/Toxicity Reduction Evaluation of a coal ash effluent. Mr. Reash's professional experience includes: External peer reviewer for U.S. EPA's "Draft Revised Aquatic Life Criteria for Selenium", 2002; Chairman, Utility Water Act Group Water Quality Committee, 2000 to 2003; President, Society of Environmental Toxicology and Chemistry, Ohio Valley Chapter, 1992-1993; Co-chair, Ohio EPA TMDL External Advisory Group, 1999 – 2001; Water Environment Research Foundation, steering member committee member on Chemical Frequency, Magnitude, and Duration Versus Ecological impact", 1997 – 2002; Member, ORSANCO Ohio River biocriteria development advisory committee, 1997 – 2002. Mr. Reash's Honors and Professional Certification include: Marquis "Who's Who in Science and Engineering", 2004; Steven J. Koorse Award of Excellence, Utility Water Act Group, 2004; Certified Fisheries Scientist (American Fisheries Society), 1998 to present; American Electric Power, Gold Star Award for Environmental Achievement, 2000. Professional memberships include: Society of Environmental Toxicology and Chemistry; Ohio Valley Chapter, Society of Environmental Toxicology and Chemistry.

Julio Salinas

Dr. Julio Salinas received a Ph.D. in Mammalian Biochemistry and Metabolism from the Massachusetts Institute of Technology, and a Professional Degree and Title in Biochemistry from the University of Chile. He has been Staff Toxicologist Specialist with the Office of Environmental Health Hazard Assessment (OEHHA), at the Sacramento Headquarters of the California Environmental Protection Agency (Cal/EPA), for the past 15+ years. The primary focus of his expertise and duties is in methods and approaches for health risk assessment of environmental contamination problems and the interface between risk assessment and risk management. He provides assistance to organizations within Cal/EPA, such as Regional Water Quality Control Boards, California Integrated Management Board, and the Department of Toxic Substances Control, and has assisted in the risk assessment of about hundred contaminated sites in California. He conducts scientific review of work plans, site characterization, health risk assessment reports, risk-based remedial activities, permitting of facilities, remedial actions, and closure plans, for soils and groundwater contaminated with organic and heavy metals. He has also prepared and reviewed standard and criteria reports. He reviewed numerous site-specific reports for ATSDR. He conducts training for Cal/EPA in health risk assessment and the interface with risk management, and has conducted training in toxicology and risk assessment in Mexico in Spanish. Invited in 2003 by the Comisión Nacional del Medio Ambiente (CONAMA) (National Commission for the Environment), Ministry of Internal Affairs of Chile, Dr. Salinas provided ad honorem a cycle of conferences on health risk assessment and the interface with risk management in Chile. Prior to joining the State of California, he worked as a consultant and in private business. Under contract with Eastern Research Group, Arlington, MA, Dr. Salinas reviewed and prepared technical documents for the U.S.EPA Drinking Water Criteria and Health and Environmental Effects Profile reports, researched on verification of uncertainty factors in inhalation reference doses, prepared the IPCS Environmental Health Criteria #107 on Barium, and reviewed and reported on risk assessment approaches for DEHP. Dr. Salinas has extensive expertise in the management and the scientific direction of contract toxicology laboratories. He provided total project management from concept to conduct to report for in vivo safety and toxicological characterization studies for compliance with U.S.EPA, U.S.FDA and OECD protocols, and developed quality assurance and corporate Good Laboratory Practice programs. He was a Ford Foundation Fellow at M.I.T. (1973-1976) , and received a Cal/EPA Certificate of Recognition for Outstanding Job Performance and Contributions (1997). Professional interests include methods for data quality, analysis of causal inference, probabilistic risk assessment, total quality management, and guidance documents in health risk assessment. Extracurricular activities have not involved external financial support.

James Shine

Dr. James Shine is currently an Assistant Professor of Aquatic Chemistry in the Department of Environmental Health at the Harvard School of Public Health. His background is in aquatic biogeochemistry, and his research examines the transport, fate, and effects of contaminants in aquatic ecosystems, with an emphasis on heavy metals. He has a particular interest in understanding the role of biogeochemical cycling on the form and bioavailability of heavy metals, thus affecting exposure and risks to both human and ecological receptors. Dr. Shine has served on a number of advisory panels that range from local to international in scope. For example, through the non-profit group Seachange, Dr. Shine has worked with the citizens of Fairhaven, Massachusetts, to understand the technical issues associated with a Superfund Site in their town. At the regional level, Dr. Shine has been appointed to a science advisory panel to oversee issues associated with the discharge of sewage into Massachusetts Bay by the Massachusetts Water Resources Authority (MWRA). This unique panel, independent from the MWRA, is required by the USEPA and Massachusetts Dept. Environmental Protection as part of the MWRA discharge permit. At the international level, Dr. Shine is a part of an Intergovernmental Oceanographic Commission (UNESCO) ad hoc group of experts charged with the development of indicators of marine ecosystem stress applicable for assessments of marine environmental health in developing nations. Through these activities Dr. Shine has come to appreciate the role of academic research science in the formulation and application of sound environmental policies. Dr. Shine's current and pending sources of research funding are varied. They range from several federally funded grants from NIEHS to study the transport, fate, and effects of heavy metals in the environment, through internal Harvard funding to investigate novel environmental contaminants. Dr. Shine also has funding from organizations such as the American Chemistry Council (through an award from the Society of Environmental Toxicology and Chemistry) to study the regulation of metal mixtures in aquatic sediments. Dr. Shine's current sources of research funding include: National Institute of Environmental Health Sciences, "Exposure Assessment of Children to Metals in Mining Waste: Composition Environmental Transport and Exposure Patterns", 2004-2009; Harvard University Center for the Environment, "Risk-based Prioritization of a New Class of Aquatic Pollutants: Pharmaceuticals and Personal Care Products (PPCPs)", 2004-2005; Harvard-NIEHS Center Grant. "Risk-based Prioritization of a New Class of Aquatic Pollutants: Pharmaceuticals and Personal Care Products (PPCPs)", 2004-2005; National Institute of Environmental Health Sciences, "Superfund Toxic Substances: Development and Application of Methods to Determine the Bioavailability of Contaminants in Aquatic Sediments", 2001-2006; National Institute of Environmental Health Sciences, "Superfund Toxic Substances: Biological Responses of Organic and Metal Contaminants in New Bedford Harbor: Methods for Monitoring Ecological Health, 2001-2006; National Institute of Environmental Health Sciences, "Superfund Toxic Substances: Environmental and Biological Chemistry", 2001-2006; American Chemistry Council, "Risk Assessment in Contaminated Sediments: Accounting for Speciation, Multiple Routes of Exposure, and Complex Mixtures", 2001-2004. Dr. Shine's pending sources of grant funding include: National Oceanic and Atmospheric Administration, "Coastal Eutrophication and Hypoxia: Implications for Mercury Methylation, Mercury Biomagnification, and Human Health", 2004-2007; and United States Environmental Protection Agency, "Statistical Modeling of Contaminant Thresholds in Aquatic Sediments Using Multiple Biological Outcomes Occurring at Different Time Scales", 2005-2007.

Katherine Squibb

Dr. Katherine S. Squibb is an Associate Professor in the Department of Epidemiology and Preventive Medicine at the University of Maryland School of Medicine in Baltimore, MD and Director of the University of Maryland System-Wide Graduate Program in Toxicology. Dr. Squibb's research in toxicology focuses on the target organ effects of metals such as arsenic, lead, cadmium and mercury and on the biological pathways that control their toxicity and ability to cause cancer. She currently directs EPA funded research on the health effects of ambient air particles and is working with the Baltimore VA Medical Center on a clinical surveillance program designed to develop better exposure monitoring and an understanding of the health effects of depleted uranium (DU) exposure in U.S. soldiers. Dr. Squibb also has experience in the evaluation of public health risks associated with environmental chemical exposures. Dr. Squibb has worked with citizen groups, federal and state agencies, and restoration advisory boards on environmental monitoring, risk assessment, and the clean up of Superfund hazardous waste sites. In collaboration with the University of Maryland Environmental Law Clinic she has worked on issues dealing with chemical discharge permits, the clean-up of local Brownfields sites, and health risks associated with chemical contaminants at military bases. She has recently served as chair of the Environmental Issues committee for Maryland's Cancer Control Plan and is an active member of the Society of Toxicology, serving in the past as president of the metals specialty section and is currently on the governing board for the regional National Capital Area Chapter of the Society of Toxicology. Dr. Squibb received her PhD in biochemistry from Rutgers, the State University of New Jersey in 1977 and completed a postdoctoral fellowship at the National Institute of Environmental Health Sciences (NIEHS) in Research Triangle Park, NC in 1982.

William Stubblefield

Dr. William Stubblefield is a senior environmental toxicologist with Parametrix, Inc. in Corvallis, Oregon; he also holds a courtesy faculty appointment in the Department Molecular and Environmental Toxicology at Oregon State University. Dr. Stubblefield has more than 15 years of experience in environmental toxicology, ecological risk assessment, water quality criteria derivation, and aquatic and wildlife toxicology studies. He has authored more than 50 peer-reviewed publications and technical presentations in the areas of aquatic and wildlife toxicology and environmental risk assessment. He is a co-editor of a recently published book entitled, "Re-evaluation of the State of the Science for Water Quality Criteria," that specifically examines the issues and approaches to be used in the evaluation of environmental impacts associated with contaminants in multiple media. Dr. Stubblefield's research efforts have looked at the fate and effects of metal and hydrocarbon contaminants in the environment and the relationships between these contaminants in the water/sediment/soil compartments. He has also investigated food chain concerns through research efforts such as the investigation of metals transfer in resident aquatic and terrestrial organisms on Alaska's North Slope. His most recent research uses a combination of laboratory and field methods to investigate the effects of storm water-associated short-term pulse exposures of metals to aquatic organisms and examines the fate and disposition of storm water-associated metals in natural systems. About 70% of Parametrix projects are funded by municipal and other government agencies the remainder are industrial clients. Funding for the majority of Dr. Stubblefield's metal related work comes from industrial trade associations or not-for-profit research organizations working in cooperation with U.S. EPA. Dr. Stubblefield is an active member of the Society of Environmental Toxicology and Chemistry, where he serves as President of SETAC North America, member of the SETAC World Council, chairman of the SETAC's Metals Advisory Group, past member of the Editorial Board for Environmental Toxicology and Chemistry. He has been an invited participant at a number of scientific and regulatory conferences, served on U.S. EPA peer-review panels, and frequently acts as a technical reviewer for a number of scientific publications. Dr. Stubblefield has a Ph.D. in Environmental Toxicology from the University of Wyoming, a M.S. degree in Toxicology/Toxicodynamics from the University of Kentucky, and a B.S. in Biology from Eastern Kentucky University.

Bernard Weiss

Dr. Bernard Weiss is currently Professor of Environmental Medicine at the University of Rochester School of Medicine and Dentistry, where he has been a member of the faculty since 1965. He received the B.A. degree from New York University and the Ph.D. from the University of Rochester. Before joining the faculty at Rochester, he served on the faculty of the Johns Hopkins School of Medicine, and, earlier, held an appointment at the U.S. Air Force School of Aviation Medicine. He has served as a member of many committees and panels devoted to toxicology and environmental health, including those organized by the U.S. Environmental Protection Agency's Science Advisory Board (such as the Dioxin Reassessment Review Panel, the Human Health Research Strategy Panel, and the Subcommittee on Human Testing of Pesticides), and the National Academy of Sciences (for example, the recent Committee on Air Quality in Passenger Aircraft, and, currently, the Space Exposure Guidelines Committee). He is especially concerned with risk assessment issues arising from the effects of environmental chemicals on the brain, behavior, and performance. In 1986 he was named Scientist of the Year by the Learning Disabilities Association of America, and, in 1990, was awarded the Stokinger Prize by the American Conference of Governmental Industrial Hygienists (ACGIH). In 2003, he received a Distinguished Investigator Award from the Neurotoxicology Specialty Section of the Society of Toxicology. He has served as president of several organizations in the area of neurotoxicology. Dr. Weiss is the editor or co-editor of seven books and monographs and author or co-author of over 200 articles. His special interests and publications lie primarily in areas that involve chemical influences on behavior; these include the neurobehavioral toxicology of metals such as lead, mercury and manganese; endocrine disruptors such as dioxin; solvents such as toluene and methanol; drugs such as cocaine; and air pollutants such as ozone. His current research anticipates funding from NIH (NIEHS) for a project to investigate the joint toxicity of mercury.

John Westall

Dr. John Westall is Professor of Chemistry at Oregon State University. He received a B.S. in Chemistry from the University of North Carolina at Chapel Hill and a Ph.D. in Chemistry from MIT, and he did postdoctoral research at the Swiss Federal Institute of Technology (EAWAG/ETH) and the University of Bern, Switzerland. His area of expertise and current research activities are focused on the application of surface and solution chemistry to problems in environmental geochemistry, electrochemistry, and analytical chemistry. He has served recently on the National Research Council Committee on Technologies for Cleanup of Subsurface Contaminants in the DOE Weapons Complex (1997-1999), and he was a participant in the Workshop on "Hazard Identification Approach for Metals and Inorganic Substances," and Chair of the Workgroup on "Science Underpinnings of the Use of Persistence as an Indicator of Hazard and of Persistency Measurements," sponsored by the Society for Environmental Toxicology and Chemistry (2003). His research has been funded recently by the National Science Foundation and the Defense Advanced Research Projects Agency.

Herbert Windom

Dr. Herbert Windom is a geochemist at the Skidaway Institute of Oceanography where he has been employed since 1968. He was Acting Director from 1/94 until 3/2001 at which time he became an Emeritus Professor. He is also an Adjunct Professor at the University of Georgia and at Georgia Tech from which most of his graduate students come. Over the past thirty plus years his research has focused the transfer and fate of trace elements in riverine, estuarine and coastal marine environments and the contamination of these systems from land-based sources. To understand how such things as watershed characteristics, climatology and human intervention affect processes, he has conducted studies in various parts of the world from the Russian Arctic to the Asian tropics and has studied heavily impacted as well as relatively pristine systems. This research has been/is funded by NSF, NOAA, EPA, ONR, DOD and other State and Federal agencies. Past national and international service includes the United Nations sponsored Group of Expert on the Protection of the Marine Environment (Chairman), several environmental committees of the International Council for the Exploration of the Seas and UNESCO and several review committees and panels for National and State environmental programs. Present service includes EPA's Board of Scientific Councilors, the Coastal Advisory Council for the State of Georgia and several additional State, private and professional boards, panels and committees Dr. Windom received his BS from Florida State University and MS and Ph.D degrees from the University of California, San Diego (Scripps Institution of Oceanography).

Judith Zelikoff

Dr. Judith T. Zelikoff is a tenured-Associate Professor at New York University School of Medicine in the Department of Environmental Medicine, where she has been on the faculty since 1984. She is also an adjunct professor at Cornell University (Ithaca, NY). Her scientific interests concern the effects of environmental chemicals, in particular metals on the immune response of exposed hosts. Her research in eco-immunotoxicology has demonstrated the effects of metal and organic polluted aquatic sites on the health status of resident fish. Along these lines, she has also employed fish as well as other sentinel species for evaluating chemical pollutant-induced health effects in mammalian systems. In addition to research in ecotoxicology, Dr. Zelikoff's studies in environmental science also include research in the area of inhalation toxicology, with particular emphasis on the role of metallic, gaseous, and particulate air pollutants on pulmonary host resistance against infectious disease. She has well-funded, active research programs in both of the aforementioned scientific areas. The ecotoxicological studies are supported, for the most part, by the Department of Defense (DOD, U.S. Army), while studies in pulmonary toxicology are supported by a variety of Federal and Private Agencies including the National Institute of Environmental Health Sciences (NIEHS) and National Institute of Occupational Safety and Health (NIOSH). Dr. Zelikoff has over 70 publications in the areas of ecotoxicology and pulmonary toxicology, as well as edited three books including "*Immunotoxicology of Occupational and Environmental Metals*," "*Ecotoxicology: Responses, Biomarkers and Risk Assessment*," and "*Pulmonary Immunotoxicology*". In addition, she is an Associate Editor for the journal *Biomarkers* and *Journal of Toxicology and Environmental Health*, as well as an Editorial Board member for six journals including *Toxicology and Applied Pharmacology*, *Toxicology*, *Fish and Shellfish Immunology*, and *Diseases of Aquatic Organisms*. In addition, she served from 1995-1998 as the North American Editor for *Toxicology and Ecotoxicology News*. Dr. Zelikoff has also organized numerous meetings/workshops/symposia worldwide including one on the "Mechanisms of Metal Toxicity in Aquatic Organisms" and "Health Risks Associated with Prenatal Metal Exposure". She is an active member of the National Society of Toxicology (SOT) and currently serves as president-elect of the Metals Specialty Section, as well as a member of the Education Committee and Sub-Committee for Minority Initiatives. Over the last 5 years, she has served as president of the SOT Immunotoxicology Specialty Section, Chair of the Continuing Education Committee, and member of the Program Committee. Moreover, she currently serves on the National Research Council Subcommittee for Spacecraft Water Guidelines, and from 1996 – 2000 served as a member of the NIEHS Special Emphasis Panel. She also serves as an *ad hoc* grant Reviewer for EPA, DOD, NIH, and a variety of state Sea Grant Programs. Dr. Zelikoff has also contributed to the American Lung Association Criteria Document on Woodsmoke and EPA document on endocrine disruptors. Dr. Zelikoff received her Ph.D. in experimental pathology from the University of Medicine and Dentistry of New Jersey (UMDNJ), a master's degree in microbiology from Fairleigh Dickinson University, and a BS in biology from Upsala College.