Human and Environmental Exposure Science in the 21st Century

Committee

Kirk R. Smith

Chair

Kirk R. Smith is professor of global environmental health and director of the Global Health and Environment Program at the University of California at Berkeley School of Public Health. Previously, he was founder and head of the Energy Program of the East-West Center in Honolulu. Dr. Smith’s research interests include environmental and health issues in developing countries, particularly those related to health-damaging and climate-changing air pollution from household energy use. His research also includes field measurement and health-effects studies in India, China, Nepal, Mexico, and Guatemala, as well as development and application of tools for international policy assessments. He also develops and deploys small, smart, and cheap microchip-based monitors for use in these settings. Dr. Smith serves on several national and international scientific advisory committees, including the Global Energy Assessment, National Research Council’s Board on Atmospheric Science and Climate, the executive committee for the World Health Organization Air Quality Guidelines, and the International Comparative Risk Assessment. He also participated along with many other scientists in the Intergovernmental Panel on Climate Change’s (IPCC's) 3rd and 4th assessments and thus shared the 1997 Nobel Peace Prize. Dr. Smith was elected as a member of the National Academy of Sciences in 1997. He received the Heinz Prize in Environment in 2009. Dr. Smith received a PhD in biomedical and environmental health science from the University of California at Berkeley.

Paul J. Lioy

Vice Chair

Paul J. Lioy is a professor in and the Vice Chair of the Department of Environmental and Occupational Medicine at the University of Medicine and Dentistry of New Jersey (UMDNJ) - Robert Wood Johnson Medical School (RWJMS). He is also the deputy director of government relations and director of exposure science at the Environmental and Occupational Health Sciences Institute (EOHSI) of UMDNJ-RWJMS and Rutgers University. Dr. Lioy is a member of the U.S. EPA Science Advisory Board, and has served on the Board of Toxicology and Environmental Studies of the National Research Council. He is a fellow of the Collegium Ramazzini, and was a member of the International Joint Commission Air Quality Board for U.S. and Canada. He is a former president of the International Society of Exposure Science (Analysis) and was the 1998 recipient of the Wesolowski Award for Human Exposure Research. He was also the 2003 recipient of the Air and Waste Management Association Frank Chambers Award for Lifetime Research and Applications in Air Pollution, and among his other awards, he was the 2008 recipient of the Rutgers Graduate School Distinguished Alumnus Award in Mathematics, Engineering and Physical Sciences. Dr. Lioy's research interests include human exposure to environmental and occupational pollution, multi-media exposure issues for metals and pesticides, research on air pollution theory of exposure and dose relationships, and participation in the study of exposure and/or effects of pollution on human health in urban and non-urban areas and controlled environments. He has 250 peer-reviewed papers, and is an Information Sciences Institute (ISI) highly cited scientist in the area of environment and ecology. Dr. Lioy has been and is a member of numerous editorial boards, including his current positions as associate editor of Environmental Health Perspectives, and the Journal of Exposure Science and Environmental Epidemiology. He served as a member of numerous National Research Council committees, and was the chair of the 1987-1991 Committee on Air Pollution Exposure Assessment. Dr. Lioy received a PhD in environmental sciences from Rutgers University.

Richard T. Di Giulio

Member

Richard T. Di Giulio serves as director of Duke University's Integrated Toxicology Program and the Superfund Basic Research Center. His research is concerned with basic studies of mechanisms of contaminant metabolism, adaptation and toxicity, and with the development of mechanistically-based indices of exposure and toxicity that can be employed in biomonitoring. The long term goals of this research are to bridge the gap between mechanistic toxicological research and the development of useful tools for environmental assessment, and to elucidate linkages between human and ecosystem health. The bulk of Dr. Di Giulio's work employs a comparative approach with aquatic animals, particularly fishes, as models. Of particular concern are mechanisms of oxidative metabolism of aromatic hydrocarbons, mechanisms of free radical production and antioxidant defense, mechanisms of chemical carcinogenesis, and developmental perturbations and adaptations to contaminated environments by fishes. He received a PhD from the Virginia Polytechnic Institute and State University.

Paul Gilman

Member

J. Paul Gilman is senior vice president and chief sustainability officer for Covanta Energy. Previously, he served as director of the Oak Ridge Center for Advanced Studies and as assistant administrator for research and development in the U.S. Environmental Protection Agency. He also worked in the Office of Management and Budget, where he had oversight responsibilities for the U.S. Department of Energy (DOE) and all other science agencies. In DOE, he advised the secretary of energy on scientific and technical matters. From 1993 to 1998, Dr. Gilman was the executive director of the Commission on Life Sciences and the Board on Agriculture and Natural Resources of the National Research Council (NRC). He is a member of the NRC Board on Environmental Studies and Toxicology and has served on several committees, among other NRC activities. Dr. Gilman received his PhD in ecology and evolutionary biology from the Johns Hopkins University

Michael Jerrett

Member

Michael Jerrett, is an associate professor in the Division of Environmental Health Science, School of Public Health, University of California, Berkeley. Building on expertise in Health Geography, Geographic Information Science, and Spatial Analysis, Dr. Jerrett assesses the role of the built environment on numerous health risks and outcomes. His topical areas of focus are (a) air pollution exposure modeling and health effects assessment; (b) obesity and the built environment (i.e., how the built landscape influences physical activity and food intake); and (c) the social distribution of environmental exposures. He has published some of the most widely cited studies on air pollution health effects, social susceptibility to environmental risks, and environmental inequality. Dr. Jerrett received his PhD in geography from the University of Toronto (Canada).

Petros Koutrakis

Member

Petros Koutrakis is a professor of environmental sciences and director of the Environmental Chemistry Laboratory at Harvard University. He is also the director of the U.S. Environmental Protection Agency/Harvard University Ambient Particle Center. Dr. Koutrakis is the past technical editor-in-chief of the Journal of the Air & Waste Management Association. His research interests include human exposure assessment, ambient and indoor air pollution, environmental analytical chemistry, and environmental management. He has more than 170 peer-reviewed publications and seven patents, and has conducted a number of comprehensive air pollution studies in the United States, Canada, Spain, Chile, and Greece. He is a member of several national and international committees and he has served as a member of the National Research Council (NRC) Committee on Research Priorities for Airborne Particulate Matter. He currently serves as a member of the NRC Committee for Review of the Army's Enhanced Particulate Matter Surveillance Project Report. Dr. Koutrakis received a PhD in environmental chemistry from the University of Paris.

Thomas E. McKone

Member

Thomas E. McKone is a senior staff scientist and deputy department head at the Lawrence Berkeley National Laboratory and an adjunct professor and researcher at the University of California, Berkeley School of Public Health. Dr. McKone was appointed by California Governor Arnold Schwarzenegger to the California Scientific Guidance Panel. He is a fellow of the Society for Risk Analysis, former president of the International Society of Exposure Analysis, and a member of the Organizing Committee for the International Life-Cycle Initiative, which is a joint effort of the United Nations Environment Program and the Society for Environmental Toxicology and Chemistry. Dr. McKone's research interests include the use of multimedia compartment models in health-risk assessments, chemical transport and transformation in the environment, and measuring and modeling the biophysics of contaminant transport from the environment into the microenvironments with which humans have contact and across the human-environment exchange boundaries—skin, lungs, and gut. One of Dr. McKone's most recognized achievements was his development of the CalTOX risk-assessment framework for the California Department of Toxic Substances Control. He has been a member of several National Research Council committees, including the Committee on Environmental Decision Making: Principles and Criteria for Models, the Committee on Improving Risk Analysis Approaches Used by the U.S. EPA, and the Committee on Human Health Reassessment of TCDD and Related Compounds. He received his PhD in engineering from the University of California at Los Angeles.

James T. Oris

Member

James T. Oris is a professor in the Department of Zoology and is the associate dean for research and scholarship at Miami University in Oxford, Ohio. Dr. Oris' areas of research interest center on the ecological toxicology of chemicals in aquatic systems. He has focused on sediment toxicity, photo-induced toxicity, long-term reproductive toxicity, routes of uptake, and environmental factors that may alter fate and effects. These studies have ranged from the use of molecular biomarkers to landscape-scale ecological assessments. Dr. Oris is also interested in standard toxicity test development and methodology, including the statistical modeling and analysis of toxicity dose-response relationships. Dr. Oris served as the president (2004-2005) of the Society of Environmental Toxicology and Chemistry (SETAC) North America. He received a PhD in environmental toxicology and fisheries and wildlife from Michigan State University.

Amanda D. Rodewald

Member

Amanda Rodewald is professor of wildlife ecology in the School of Environment and Natural Resources, The Ohio State University. Dr. Rodewald's research program examines the mechanisms guiding landscape-scale responses of animal communities to anthropogenic disturbances at multiple spatial scales and across multiple levels of biological organization. Her research touches on a variety of sub-disciplines, including conservation biology, landscape ecology, population demography, community ecology, behavioral ecology, and ecological restoration. She serves on the editorial board of Studies in Aviation Biology and is a member of EPA's Science Advisory Board. She received her Ph.D. in ecology from Pennsylvania State University.

Susan L. Santos

Member

Susan L. Santos is an assistant professor in the Department of Health Education and Behavioral Sciences at the University of Medicine and Dentistry of New Jersey School of Public Health. She holds a concurrent appointment at the U.S. Department of Veteran Affairs War Related Illness and Injury Study Center in East Orange, NJ where she serves as the risk communication specialist dealing with deployment-related health risks. Dr. Santos is also the founder and principal of FOCUS GROUP, a consultancy specializing in risk communication, community relations, and health and environmental management. She combines her research and hands-on experience to aid federal, state and local government agencies, and private-sector clients with the design, implementation, and evaluation of health, safety and environmental risk communication and community involvement programs. Prior to forming FOCUS GROUP, Dr. Santos served as Director of Corporate Risk Assessment Services for ABB Environmental, Inc. She also worked for 8 years for EPA Region 1 in the areas of hazardous waste management. She conducted research projects exploring how to communicate the results of health studies to community members, including to low-literate audiences, and methods for evaluating stakeholder involvement programs. Dr. Santos has a PhD in law, policy and society from Northeastern University.

Richard Sharp

Member

Richard Sharp is director of bioethics research at the Cleveland Clinic. Prior to joining the Cleveland Clinic in 2007, Dr. Sharp taught bioethics at Baylor College of Medicine and he directed the Program in Environmental Health Policy and Ethics at the National Institute of Environmental Health Sciences. His research examines the promotion of informed patient decision-making in clinical research, particularly research that involves genetic analyses. Dr. Sharp has been appointed to membership on the Ethical, Legal, and Social Implications of Human Genetics Study Section, Center for Scientific Review at the National Institute of Health. He received his PhD from Michigan State University.

Gina M. Solomon

Member

Gina Solomon is a senior scientist at the Natural Resources Defense Council and an associate clinical professor of medicine at the University of California, San Francisco (UCSF), where she is also the director of the UCSF occupational and environmental medicine residency program and the associate director of the UCSF Pediatric Environmental Health Specialty Unit. Her work has included research on asthma, climate change, and environmental and occupational threats to reproductive health and child development. Dr. Solomon serves on the Environmental Protection Agency Science Advisory Board Drinking Water Committee, on the National Toxicology Program's Board of Scientific Counselorse and on the Scientific Guidance Panel of the California Environmental Contaminant Biomonitoring Program. She serves on the editorial board of the journal Environmental Health Perspectives. Dr. Solomon was a member of the NRC committee on Toxicity Testing in the 21st Century. Dr. Solomon received her B.S. from Brown University, her M.D. from Yale School of Medicine and her M.P.H. from the Harvard School of Public Health.

Justin G. Teeguarden

Member

Justin G. Teeguarden is a senior scientist in biological monitoring and modeling at Pacific Northwest National Laboratory. He previously served as chair and president elect for the Dose-Response Specialty Section of the Society of Risk Analysis. He also served as a member of the EPA's STAR grant review panel (Computational Toxicology). In 2003, Dr. Teeguarden was awarded by the Risk Assessment Specialty Section of the Society of Toxicology for the Best Published Manuscript Advancing the Science of Risk Assessment. His current research involves developing an integrated systems-biology-directed research program in particulate matter on respiratory health. He continues to consult both for the U.S. EPA and private companies on developing and applying physiologically based pharmacokinetic (PBPK) models and other dosimetry approaches supporting risk assessments. He received his PhD in toxicology from the University of Wisconsin, Madison.

Duncan C. Thomas

Member

Duncan Thomas is the Director of the Biostatistics Division within the Department of Preventive Medicine at the University of Southern California and holds the Verna Richter Chair in Cancer Research. Dr. Thomas was Co-Director of the Southern California Environmental Health Sciences Center (funded by the National Institute of Environmental Health Sciences) and is Director of its Study Design and Statistical Methods of Research Core. His research interests include the development of statistical methods in epidemiology, with special emphasis on cancer epidemiology, occupational and environmental health, and genetic epidemiology. He is also one of the senior investigators in the California Children's Health Study. He has published more than 200 peer-reviewed journal articles in these areas of research and is the author of Statistical Methods in Environmental Epidemiology (Oxford University Press, 2009). Dr. Thomas is a Fellow of the American College of Epidemiology and a past President of the International Genetic Epidemiology Society. He has served as a member of the National Research Council committees to review radioepidemiology tables, the biological effects of populations of exposures to low levels of ionizing radiation (BEIR V), and improving the presumptive disability decision-making process for veterans. He was a member of President Clinton's Advisory Committee on Human Radiation Experiments. Dr. Thomas received his Ph.D. in epidemiology and health from McGill University and his M.S. in mathematics from Stanford University.

Thomas G. Thundat

Member

Thomas G. Thundat is a Canada Excellence Research Chair professor at the University of Alberta, Edmonton, Canada. Until recently he was a UT-Battelle/ORNL Corporate Fellow and the leader of the Nanoscale Science and Devices Group at the Oak Ridge National Laboratory. He is also a Research Professor at the UT, Knoxville, a visiting professor at the University of Burgundy, France, and a Distinguished Professor at the Indian Institute of Technology, Madras. He received his Ph.D in physics from State University of New York at Albany in 1987. He is the author of over 263 publications in refereed journals, 45 book chapters, and 32 patents. Dr. Thundat is the recipient of many awards that include the U.S. Department of Energy's Young Scientist Award, R&D 100 Awards, ASME Pioneer Award, Discover Magazine Award, FLC Awards, Scientific American 50 Award, Jesse Beams Award, Nano 50 Award, Battelle Distinguished Inventor, and many ORNL Awards for invention, publication, and Research and Development. Dr. Thundat is an elected Fellow of the American Physical Society (APS), the Electrochemical Society (ECS), the American Association for Advancement of Science (AAAS), and the American Society of Mechanical Engineers (ASME). Dr. Thundat's research is currently focused on novel physical, chemical, and biological detection using micro and nano mechanical sensors. His expertise includes physics and chemistry of interfaces, biophysics, solid-liquid interface, scanning probes, nanoscale phenomena, and quantum confined atoms.

Sacoby M. Wilson

Member

Sacoby M. Wilson is an Assistant Professor at the Maryland Institute for Applied Environmental Health at University of Maryland. Dr. Wilson formerly was at the University of Michigan in the Robert Wood Johnson Health and Society Scholars Program where he developed a research agenda examining built environments, planning, and health disparities. His research areas include the intersection of environmental and social determinants of health and health disparities, the impact of the built environment on vulnerable populations, spatio-temporal mapping of social and environmental phenomena, community-driven environmental justice research on potential environmental public health consequences, and GIS-based exposure assessment. Dr. Wilson received his PhD and MS degrees in environmental health sciences from the University of North Carolina at Chapel Hill.