

Emerging Science on Indoor Chemistry

Committee

David C. Dorman

Chair

David C. Dorman (Chair) is a professor of toxicology in the Department of Molecular Biomedical Sciences at North Carolina State University. His research interests include neurotoxicology, nasal toxicology, pharmacokinetics, and cognition and olfaction in animals. He is an elected fellow of the Academy of Toxicological Sciences, a fellow of the American Association for the Advancement of Sciences, and a diplomate of the American Board of Veterinary Toxicology and the American Board of Toxicology. Dr. Dorman has chaired or served on several National Academies committees and is a National Associate of the Academies. He completed a combined PhD and veterinary toxicology residency program at the University of Illinois at Urbana-Champaign and holds a DVM from Colorado State University.

Jonathan Abbatt

Member

Jonathan Abbatt is a professor of chemistry at the University of Toronto. His research activities lie broadly in the areas of atmospheric aerosol and multiphase chemistry using laboratory and field measurement techniques. His current research is investigating the chemistry of the indoor environment, Arctic chemistry and connections to global warming, and the role that aerosol particles play in the chemistry of the atmosphere. Dr. Abbatt was co-chair of the Gordon Conference on Atmospheric Chemistry and has served on the scientific steering committee of the International Global Atmospheric Chemistry project. He was given the Canadian Institute for Chemistry Environmental Research Award, is a Fellow of the American Geophysical Union, was elected to the Royal Society of Canada, and was awarded a Killam Research Fellowship. He received his PhD from Harvard University in atmospheric chemistry.

William P. Bahnfleth

Member

William P. Bahnfleth is a professor of architectural engineering at Pennsylvania State University. His primary expertise is in building heating, ventilation, and air conditioning systems from the perspectives of indoor air quality control and energy efficiency. His research interests include the control of chemical, particulate, and biological indoor air contaminants with ventilation, filtration, and air cleaners. He is a past President of the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) and a fellow of ASHRAE, the American Society of Mechanical Engineers, and the International Society for Indoor Air Quality and Climate. He served on the National Academies Committee on Protecting Occupants of Department of Defense Buildings from Chemical and Biological Release and the Committee on Safe Buildings Program. He received his PhD in mechanical engineering from the University of Illinois at Urbana-Champaign.

Ellison Carter

Member

Ellison Carter is an assistant professor in the Department of Civil and Environmental Engineering at Colorado State University. Dr. Carter has expertise in indoor air quality, exposure science, and the residential built environment. She conducts field-based assessments of personal, indoor, and outdoor air quality and human behaviors in the home. Her research aims to contribute to the development and implementation of healthy housing and indoor environmental interventions in diverse domestic and international settings. She earned her PhD in civil engineering focused on environmental and water resources from the University of Texas at Austin.

Delphine Farmer

Member

Delphine Farmer is an associate professor in the Department of Chemistry at Colorado State University. Her research focuses on outdoor atmospheric and indoor chemistry with an emphasis on understanding the sources and sinks of reactive trace gases and particles and their effects on climate, ecosystems, and human health. Her recent work has focused on air chemistry in residential environments. Dr. Farmer was a co-lead of the House Observations of Microbial and Environmental Chemistry study, and she will co-lead the upcoming Chemical Assessment of Surfaces and Air indoor study. Dr. Farmer received the Arnold and Mabel Beckman Young Investigator Award. She received her PhD in chemistry from University of California, Berkeley.

Gillian Gawne-Mittelstaedt

Member

Gillian Gawne-Mittelstaedt is Director of the Tribal Healthy Homes Network, a consortium that works to prevent exposure to indoor air hazards through training, community-based research, and culturally tailored interventions. She is also founder and director of the Partnership for Air Matters, a nonprofit that provides low-cost indoor air toolkits to engage and empower at-risk families. Her research focuses on developing facilitative programs and policies that reduce the adverse and inequitable health impacts of indoor environmental hazards, while her advocacy focuses on developing a more cohesive and effective risk communication strategy around fine particle air pollution and the indoor environment. Ms. Mittelstaedt serves as co-chair of the Environmental Protection Agency's (EPA) Clean Air Act 50th Anniversary workgroup, as an indoor air appointee on the EPA Clean Air Act Advisory Committee, and as a co-chair of the National Safe and Healthy Housing Coalition Steering Committee. She chaired the Washington State Asthma Initiative and the Washington Leadership Council for the American Lung Association. In 2021, she will complete her PhD in public health leadership at the University of Illinois at Chicago. Ms. Mittelstaedt holds an MPA from the Maxwell School at Syracuse University.

Allen H. Goldstein

Member

Allen H. Goldstein is the MacArthur Foundation Chair and Distinguished Professor in the Department of Environmental Science, Policy, and Management and in the Department of Civil and Environmental Engineering, at the University of California, Berkeley. Additionally, Dr. Goldstein is Associate Dean for Academic Affairs in the Rausser College of Natural Resources. Dr. Goldstein's research program focuses on anthropogenic air pollution, biosphere-atmosphere exchange of radiatively and chemically active trace gases, and the development and application of novel instrumentation to investigate the organic chemistry of Earth's atmosphere. Additionally, he engages in field measurement campaigns, controlled laboratory experiments, and modeling activities covering indoor, urban, rural, regional, intercontinental, and global scale studies of aerosols and their gas phase precursors. Dr. Goldstein previously served as co-chair of the International Global Atmospheric Chemistry program. He previously served on the Academies' Committee on the Future of Atmospheric Chemistry Research. Dr. Goldstein received his PhD in chemistry from Harvard University.

Vicki H. Grassian

Member

Vicki H. Grassian is chair of the Department of Chemistry and Biochemistry at the University of California, San Diego. She is also a Distinguished Professor with appointments in the Departments of Chemistry and Biochemistry, Nanoengineering, and Scripps Institution of Oceanography, and is the Distinguished Chair of Physical Chemistry in the Department of Chemistry and Biochemistry. Her research group focuses on environmental interfaces as it relates to atmospheric aerosols, engineered and geochemical nanoparticles, and indoor surfaces. Dr. Grassian leads the Surface Consortium for the Chemistry of the Indoor Environment Program. She received the American Chemical Society National Award in Surface Chemistry and received the William H. Nichols Medal Award for her contributions to the chemistry of environmental interfaces. She is an elected member of the American Academy of Arts and Sciences and a Fellow of the Royal Society of Chemistry. She received her PhD in chemistry from the University of California, Berkeley. Research funding is provided by P&G. Dr. Grassian is an unpaid member of the P&G Global Hygiene Scientific Advisory Board.

Rima Habre

Member

Rima Habre holds a joint appointment as an associate professor of Clinical Preventive Medicine in the Division of Environmental Health, Department of Preventive Medicine, and the Spatial Sciences Institute at the University of Southern California (USC) and leads the Exposure Sciences Research Program in the USC National Institute of Environmental Health P30 Center. Her expertise lies in environmental health, air pollution, and exposure sciences. Her research uses measurement, spatiotemporal and GIS-based modeling approaches to understand the effects of complex air pollution mixtures in the indoor and outdoor environment on the health of frontline populations over the life course. She is the director of exposure assessment at the Environmental Health Disparities Centers at USC and leads all aspects of developing and applying methods to assess exposure to multiple air pollutants and their effects on maternal and child health. She also chairs the Geospatial Working Group and the Air Pollution Subcommittee of the Chemical Exposures Working Group in the nationwide National Institute of Health Environmental Influences on Child Health Outcomes program. She received her PhD in environmental health from the Harvard T.H. Chan School of Public Health.

Glenn Morrison

Member

Glenn Morrison is a professor of environmental sciences and engineering at the University of North Carolina, Chapel Hill. His research is related to the chemistry and physics of indoor air pollution and its influence on human exposure to contaminants. He has a particular interest in interfacial chemistry, ozone-surface chemistry, acid-base chemistry, methamphetamine contamination in buildings, and the interactions of chemicals with occupant surfaces, including skin. His research group has studied how chemicals can be transported by fine particles indoors and has measured reactive oxygen species in homes. In recent years, he has focused on how clothing influences indoor chemistry and occupant exposure to chemicals. He is a fellow of the International Society of Indoor Air Quality and Climate and has served on the board and as the president from 2014-2016. He received his PhD from the University of California, Berkeley.

Jordan Peccia

Member

Jordan Peccia is the Thomas E. Golden Jr. Professor of environmental engineering at Yale University. His research integrates genetics with engineering to study human exposure to microbes in buildings. He is a member of the Connecticut Academy of Science and Engineering and is an associate editor for the Journal of Indoor Air. Dr. Peccia served on the National Academies Committee on Microbiomes of the Built Environment: From Research to Application. He earned his PhD in environmental engineering from the University of Colorado.

Dustin Poppendieck

Member

Dustin Poppendieck is an environmental engineer at the National Institute of Standards and Technology. He is interested in how building materials, building envelopes, dynamic infiltration, varied scheduled mechanical ventilation, low energy building designs, and HVAC system operation can interact and affect indoor chemistry. His research involves characterizing primary emission sources and heterogeneous reactions at material surfaces. He has investigated emissions from kerosene can lamps, spray polyurethane foam, and non-smoldering cigarette butts and has studied the disinfection of biologically contaminated (anthrax) building materials by using high concentrations of ozone, chlorine dioxide, hydrogen peroxide, and methyl bromide. He received his PhD in civil and environmental engineering from the University of Texas at Austin.

Kimberly A. Prather

Member

Kimberly A. Prather holds a joint appointment as a professor in chemistry and biochemistry at Scripps Institution of Oceanography at the University of California, San Diego. Dr. Prather is involved in aerosol source apportionment studies, and her research group is working to understand the effect of specific aerosol sources on health and climate. Dr. Prather was formerly a member of the Fine Particle Monitoring Subcommittee of the Environmental Protection Agency Clean Air Scientific Advisory Committee. She is on several journal editorial boards, including Aerosol Science and Technology. Dr. Prather is a member of many professional societies, including the American Association for Aerosol Research, the American Chemical Society, and the American Geophysical Union. She is an elected member of the National Academy of Engineering and the National Academy of Sciences. Dr. Prather received her PhD in chemistry from the University of California, Davis.

Manabu Shiraiwa

Member

Manabu Shiraiwa is an associate professor of chemistry at the University of California, Irvine. He serves as the Principle Investigator of the Modeling Consortium for Chemistry of Indoor Environments (MOCCIE). MOCCIE connects models over a range of spatial and temporal scales with an ultimate aim to develop integrated physical-chemical models that include a realistic representation of gas-phase, aerosol-phase, and surface chemistry and to understand how occupants, indoor activities, and buildings influence indoor processes. Dr. Shiraiwa has received numerous awards, including the Kenneth T. Whitby Award from the American Association for Aerosol Research, the Paul J. Crutzen Award from the International Commission on Atmospheric Chemistry and Global Pollution, the Walter A. Rosenblith Award from the Health Effects Institute, the National Science Foundation CAREER Award, the Sheldon K. Friedlander Award from the American Association for Aerosol Research, the Paul Crutzen Prize from the German Chemical Society, and the Otto Hahn Medal from the Max Planck Society. He received his PhD from the Max Planck Institute for Chemistry.

Heather Stapleton

Member

Heather Stapleton is the Ronie-Richele Garcia-Johnson Distinguished Professor in the Pratt School of Engineering at Duke University. Dr. Stapleton's research focuses on understanding the fate and transformation of organic contaminants in aquatic systems and in indoor environments. Her main focus has been on the bioaccumulation and biotransformation of brominated flame retardants, and specifically polybrominated diphenyl ethers,(PBDEs). Her current research projects explore the routes of human exposure to flame retardant chemicals and examine the way these compounds are photodegraded and metabolized using mass spectrometry to identify breakdown products/metabolites. She uses both in vivo techniques with fish, and in vitro techniques with cell cultures to examine metabolism of this varied class of chemicals. Dr. Stapleton earned her PhD from the University of Maryland, College Park.

Meredith Williams

Member

Meredith Williams was appointed Director of the California Department of Toxic Substances Control by Governor Gavin Newsom in 2019. She joined DTSC in 2013 as Deputy Director of the Department's Safer Consumer Products Program to lead the implementation of California's groundbreaking effort to reduce toxic chemicals in consumer products. She received her Ph.D. in physics from North Carolina State University in 1994 and a B.A. from Yale University in 1984. She was a speaker and panelist for the NASEM Standing Committee for Emerging Science for Environmental Health Decisions' 2017 Workshop on Understanding Pathways to a Paradigm Shift in Toxicity Testing and Decision Making. And in 2019 she participated in the Environmental Health Matters Initiative's workshop on Understanding, Controlling, and Preventing Exposure to PFAS.

Megan Harries

Staff Officer