

**Invitation for Public Comment on the List of Candidates for the
EPA Clean Air Scientific Advisory Committee
Oxides of Nitrogen Primary National Ambient Air Quality Standard (NAAQS)
Review Panel**

December 26, 2012

The U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Staff Office announced in a *Federal Register* Notice (Volume 77, Number 201, Pages 63827-63828) published on October 17, 2012 that it was forming the EPA Clean Air Scientific Advisory Committee (CASAC) Oxides of Nitrogen Review Panel to review and provide independent expert advice, through the Chartered CASAC, on EPA's technical and policy assessments that support the Agency's review of the Primary National Ambient Air Quality Standard (NAAQS) for oxides of nitrogen, including drafts of the Integrated Review Plan, Integrated Science Assessment, Risk/Exposure Assessment, and Policy Assessment. To form the Panel, the SAB Staff Office sought public nominations of nationally recognized and qualified experts in one or more of the following areas, particularly with respect to oxides of nitrogen air pollution: atmospheric science, human exposure, dosimetry, toxicology, epidemiology, medicine, public health, biostatistics, and risk assessment.

Based on the qualifications and interest of the nominees, the SAB Staff Office identified 26 candidates for the panel and the biosketches of these candidates are included.

The SAB Staff Office Director will make the final decision about who will serve on the Panel based on all relevant information. This includes a review of the confidential disclosure form (EPA Form 3110-48), relevant information gathered by staff, and public comments. For the EPA SAB Staff Office, a balanced Panel is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which, among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to adequately address the general charge. Specific criteria to be used in evaluating a candidate include: a) scientific and/or technical expertise, knowledge, and experience; b) availability and willingness to serve; c) absence of financial conflicts of interest; d) absence of appearance of a lack of impartiality; e) skills working in advisory committees and panels; and, for the panel as a whole, f) diversity of scientific expertise and viewpoints.

We hereby invite comments from members of the public to provide relevant information of other documentation that the SAB Staff Office should consider in determining who should serve on the CASAC Oxides of Nitrogen Review Panel. Please be advised that comments received are subject to release under the Freedom of Information Act. Comments should be submitted to Mr. Aaron Yeow, Designated Federal Officer, no later than January 23, 2013. E-mailing comments (yeow.aaron@epa.gov) is the preferred mode of receipt.

CASAC Oxides of Nitrogen Primary NAAQS Review Panel

Allen, George A.

Northeast States for Coordinated Air Use Management (NESCAUM)

Mr. George Allen is a Senior Scientist at NESCAUM (Northeast States for Coordinated Air Use Management), an interagency association of the eight Northeastern States. He holds a B.S. in Electrical Engineering from Tufts University (1974). At NESCAUM, Mr. Allen is responsible for monitoring and exposure assessment activities across a wide range of air topics, including regional haze, air toxics, on and off-road diesel, wood smoke, and continuous aerosol measurement technologies. He is the author or co-author of more than 30 peer-reviewed journal papers on development and evaluation of measurement methods, exposure assessment, and air pollution health effects. Before joining NESCAUM in 2002, Mr. Allen was on the professional staff at the Harvard School of Public Health (HSPH) in Boston for more than 20 years, working on a wide range of U.S. Environmental Protection Agency (EPA) and National Institutes of Health- funded air pollution studies. While at HSPH, he developed several new techniques for real-time aerosol measurements. Currently, Mr. Allen is serving as the lead for the NESCAUM Monitoring and Assessment Committee. He also represents states interests to EPA in the National Association of Clean Air Agencies (NACAA) Monitoring Steering Committee, and is a member of the EPA AIRNow Steering Committee. Mr. Allen's current and pending research support pertains to scientific, technical, analytical, and policy support for NESCAUM states' air quality and climate programs, with a focus on air pollution exposure assessment and measurement methods development. These funders include New York State Energy Research and Development Authority (NYSERDA) (characterization of biomass air pollution), Massachusetts Department of Environmental Protection (spatial and temporal trends of black carbon), NESCAUM member states and Federal Land Managers (CAMNET visibility network), NESCAUM member states and US EPA (support member states' air quality programs).

Campen, Matthew

University of New Mexico

Matthew Campen, Ph.D., M.S.P.H. is currently an Associate Professor in the Department of Pharmaceutical Sciences, University of New Mexico. His laboratory is broadly interested in the cross-talk of the cardiovascular and respiratory system in health and disease. His primary research focus involves the impact of inhaled toxicants, especially common air pollutants, on vascular function and injury. Dr. Campen was trained in Environmental Health at the University of North Carolina School of Public Health where he earned a Master's in Public Health and a Ph.D. in Environmental Health, followed by a postdoctoral fellowship in the Johns Hopkins University School of Medicine. Prior to his current appointment, he worked as an independent scientist at the Lovelace Respiratory Research Institute in Albuquerque. His laboratory is currently funded by the Environmental Protection Agency, the Health Effects Institute, and the National Institutes of Health. Dr. Campen has published over 60 peer-reviewed articles. Dr. Campen is currently the President of the Cardiovascular Toxicology Specialty Section of the Society of Toxicology. He has been appointed as an Associate Editor of Toxicological Sciences, Inhalation Toxicology, and Cardiovascular Toxicology, and also contributes to the editorial board of Toxicology Letters.

Cohen, Ronald

University of California at Berkeley

Ronald C. Cohen, BA Wesleyan University, (1985), Ph.D in Chemistry, UC Berkeley (1991), was a postdoctoral fellow and research associate at Harvard University 1991-1996. He joined the UC Berkeley faculty in 1995 and is currently a Professor in both the Chemistry and the Earth & Planetary Science Departments. He is also a faculty scientist in the Energy and Environment Division at the Lawrence Berkeley National Laboratory and serves as the Director of the Berkeley Atmospheric Science Center. Cohen is an author of 181 peer-reviewed publications. His research has been recognized with the Regents Junior Faculty Fellowship (1998), a Hellman Faculty Fellowship (1999) and National Aeronautics and Space Administration (NASA) group achievement awards (1998, 2005, 2008) and election as a Fellow of the American Geophysical Union (2012). Cohen's research combines satellite, in situ and laboratory observations aimed at describing atmospheric composition and chemistry. His research focuses on nitrogen oxide chemistry and the chemistry of evaporation as it affects clouds. New directions are targeting the development of sensor networks for the study of emissions of greenhouse gases and ozone precursors. Four MS and 20 PhD students completed their degrees under Cohen's guidance. He has mentored 6 postdoctoral fellows and 6 German Diplom students. Former PhD students are on the faculty at the University of Washington, the University of Toronto, UC San Diego, UC Davis, and Colorado State University. His current research group includes ten graduate students and one postdoctoral fellow. Cohen is a member of the American Association of the Advancement of Science, the American Geophysical Union, the European Geophysical Union, and the American Chemical Society.

Dockery, Douglas

Harvard University

Dr. Douglas W. Dockery is a Professor of Environmental Epidemiology and Chair of the Department of Environmental Health at the Harvard School of Public Health. He is the Director of the Harvard-National Institute of Environmental Health Sciences (NIEHS) Center for Environmental Health Sciences, currently in its 50th year. He received a BS in physics from the University of Maryland, an MS in meteorology from the Massachusetts Institute of Technology, and a ScD in environmental health from the Harvard School of Public Health. Dr. Dockery has been studying air pollution exposures and their health effects for almost 40 years. He served as Principal Investigator of the Harvard Six Cities Study of the Respiratory Health Effects of Respirable Particles and Sulfur Oxides. His current work includes assessment of the health benefits of air pollution controls. He has received research funding from the NIEHS, the Environmental Protection Agency, the Health Effects Institute, the Electric Power Research Institute, and the Gas Research Institute. Dr. Dockery has published over two hundred peer reviewed articles. His 1993 New England Journal of Medicine paper on air pollution and mortality in the Harvard Six Cities study is the single most cited air pollution paper, and he is the 2nd most cited author in air pollution since 1995 according to the Thomson Essential Science Indicators. In 1998, he was honored with the first John Goldsmith Award from the International Society of Environmental Epidemiology for Outstanding Contributions to the field.

Ethridge, Shannon

Texas Commission on Environmental Quality

Shannon Ethridge has been a Toxicologist in the Toxicology Division of the Texas Commission on Environmental Quality (TCEQ) for nearly 10 years. During that time as a regulatory toxicologist and risk assessor, she has worked on a great variety of environmental issue projects (e.g., remediation, chemical and baseline risk assessment, air permitting, air monitoring, combustion strategy, wildfires, and risk assessment guidelines), including many projects directly relevant to chemical risk assessment and the derivation of toxicity factors. For example, she has conducted dose-response assessments and derived toxicity factors (e.g., RFC and URF) for such data-rich chemicals as vinyl chloride, 1,1-dichloroethylene, and hydrogen chloride, and has participated in the review of many other chemical assessments. She was recently appointed as the Toxicity Factors Coordinator for the Toxicology Division. Shannon serves as the Toxicology Division expert on Oxides of Nitrogen and is responsible for reviewing and commenting on USEPA documents related to Primary and Secondary National Ambient Air Quality Standards for Nitrogen Dioxide. She had the opportunity to serve on the Federal Facilities Task Force for 2 years as the TCEQ human health risk assessor for the BWXT Pantex Nuclear Weapons facility. Shannon frequently interacts with the general public and answer questions they have about potential health effects from exposure to numerous environmental contaminants. She has participated in numerous public meetings, many of them contentious, where she communicated risk to the general public and other interested parties. She has given numerous presentations to TCEQ staff, the general public, other regulatory groups (both national and local), and other environmental professionals. As an example, she has given presentations on the potential for human health risk from emissions from oil and gas facilities in Texas, at numerous TCEQ staff training events, the TCEQ Environmental Trade Fair, a large neighborhood association meeting, an Air Pollution Prevention Workshop, and at the 2011 USEPA National Air Toxics Workshop. She was the second author on a poster entitled Practical Implementation of the Threshold of Concern and NOAEL-to-LC50 Ratio Factor Approach to Determine Acute Effects Screening Levels presented at the 2011 Society of Toxicology annual meeting. Shannon graduated from the University of Texas, School of Pharmacy with an M.S. in Pharmacy, and graduated summa cum laude with a B.S. in Biology from Texas State University. Shannon was certified as a Diplomat of the American Board of Toxicology in 2011. Prior to joining the TCEQ, she worked as a Research Associate for an identity genomics company.

Fan, Zhihua (Tina)

University of Medicine and Dentistry of New Jersey

Zhihua (Tina) Fan is Associate Professor at Exposure Science Division, the Department of Environmental and Occupational Medicine at Robert Wood Johnson Medical School. She received her B.S. and M.S. in Environmental Chemistry from Peking University in 1986 and 1989, respectively, and received her Ph.D. Degree from the Department of Environmental Sciences and Engineering at the University of North Carolina - Chapel Hill in 1995. Her doctoral research included study of photochemical reactions of polycyclic aromatic hydrocarbons (PAHs) and nitro-PAHs in a large outdoor smog chamber using diesel exhaust and wood smoke and development of reaction mechanisms for PAH and nitro-PAH in both gas and particle phases. Prior to joining University of Medicine and Dentistry of New Jersey (UMDNJ) in 1998, she worked as a Research Chemist at Research Triangle Institute (RTI) to develop/validate EPA sampling and analytical methods for the measurement of Hazardous Air Pollutants (HAPs) in furniture coatings, toxic organic compounds (aldehydes, arylamines, and glycol ethers) in stationary source emissions, herbicides in foods and beverages, and volatile organic compounds in land fill gases. Since 1998, Dr. Fan has conducted extensive research on personal and community exposure to environmental contaminants, particularly traffic-related air pollution, and associated cardiorespiratory health effects. She is one of the leading investigators studying community exposure to particulate matter and air toxics, particularly in traffic-related air pollution in many "hot spots" in NJ, characterization of local air pollution related to different land use patterns in urban communities, development of sampling and analytical methods for the measurement of air pollutants in ambient and personal air, and conducting research on aerosol formation through indoor/outdoor chemistry. Recently, Dr. Fan has worked closely with USEPA, NJ Department of Environmental Protection (NJDEP) and local community groups to conduct citizen science projects. These projects will characterize the impact of local truck traffic on community exposure in the socially-economically disadvantaged communities in NJ, with active engagement of community members in the air pollutant monitoring process, i.e. expansion of the approaches from traditional form of community education and outreach to the full participation of community members in the research processes. These projects will serve as pilot projects that will help EPA and NJDEP to determine the effectiveness and usefulness of citizen science in air monitoring projects. It will also provide guidance on the best way to implement citizen science, help local, state and federal agencies to better address concerns of a local community, and help protect and enhance public health and welfare. Dr. Fan has been actively involved in exposure research on international air pollution issues, particularly in China. She is collaborating with Chinese scientists to investigate exposure to both outdoor and indoor air pollution and children respiratory health. She has also been collaborated with Chinese scientists and initialized a study to investigate potential risks of 2008 post-earthquake exposure to disinfectants and pesticides in Wenchuan earthquake area, China.

Faulkner, William Brock

Texas A&M university

Dr. William Brock Faulkner, P.E. is an Assistant Professor in the Department of Biological and Agricultural Engineering and a member of the Center for Agricultural Air Quality Engineering and Science at Texas A&M University. He holds a B.S. in Agricultural Engineering (2004), and an M.S. (2006) and Ph.D. (2008) in Biological and Agricultural Engineering from Texas A&M University. Dr. Faulkner's research activities in air quality have included a broad range of topics relevant to emissions and mitigation of various pollutants, including criteria pollutants, ammonia, greenhouse gases, and VOCs. He has worked to characterize emissions of particulate matter (PM) from multiple agricultural facilities, including feedyards, dairies, broiler barns, and cotton and almond harvesting operations. Dr. Faulkner has extensive understanding of air pollutant sampling issues and has been asked to contribute to multiple white papers produced by the U.S. Department of Agriculture (USDA) Agricultural Air Quality Task Force (on which he now serves), brief the Task Force on issues related to ammonia and PM, and represent the USDA along with Task Force members at a meeting of scientists from the USDA and the U.S. Environmental Protection Agency (EPA) in February 2010. Furthermore, he has been asked by the Air Quality Education for Animal Agriculture program to teach continuing professional development courses on PM measurement. Dr. Faulkner's research and consulting endeavors extend to gaseous pollutants as well. He has experience measuring ammonia, volatile organic compounds, and greenhouse gas emissions from livestock production facilities using a variety of instrumentation, including gas chromatography, open path Fourier Transform Infrared Spectroscopy, and tunable diode lasers. He has worked as a consultant for numerous clients to develop New Source Review permit applications and assess the impacts of regulatory actions on emitters of air pollutants. Dr. Faulkner has a broad understanding of gaseous measurement techniques and the processes that affect gaseous pollutant generation that would enable him to contribute to review of the NAAQS for Oxides of Nitrogen. Dr. Faulkner has a national reputation as a leader in agricultural air quality. He has a broad understanding of numerous issues related to emissions and measurement of various forms of reactive nitrogen coupled with an ability to communicate technical information clearly and concisely, as demonstrated by his record as a consultant, researcher, and educator.

Fine, Philip

South Coast Air Quality Management District

Philip Fine, Ph.D. is currently a Planning and Rules Manager at the South Coast Air Quality Management District in Diamond Bar, CA. His responsibilities include Air Quality Management Plan development, particulate matter control strategies, climate and energy, meteorology and forecasting, air quality evaluation, emissions reporting, and air toxics risk assessment. Prior to transferring to this position, he served for over five years as the Atmospheric Measurement Manager at AQMD overseeing the AQMD ambient network of over 35 air monitoring stations. He was also responsible for all field activities of numerous special air monitoring research projects focusing on air toxics and the local impacts of air pollution. Prior to joining the AQMD, he was a Research Assistant Professor at the University of Southern California, Los Angeles where he taught courses and conducted extensive research on particulate pollution, its health effects, atmospheric science, and measurement methods resulting in over 45 peer-reviewed scientific publications. He received his Ph.D. from California Institute of Technology in Environmental Engineering Science, and his bachelor's degree in Mechanical Engineering from the University of California, Berkeley.

Frey, H. Christopher

North Carolina State University

Dr. H. Christopher Frey is a professor of environmental engineering in the Department of Civil, Construction, and Environmental Engineering at North Carolina State University. His research interests are measurement and modeling of real-world fuel use and emissions of onroad and nonroad vehicles; modeling and evaluation of advanced energy conversion (e.g., combustion, gasification) and environmental control systems; development and application of methods for quantification of variability and uncertainty and for sensitivity analysis in environmental systems models; and exposure and risk analysis. He has been the principal investigator or co-principal investigator for over 50 externally sponsored research projects, and has published over 90 journal papers, 150 conference papers, and 60 technical reports, and 7 book chapters and one book. He teaches courses in air pollution control, air quality, and environmental exposure and risk assessment. He currently serves on the U.S. Environmental Protection Agency's Clean Air Scientific Advisory Committee (CASAC) and on the Board of Environmental Studies and Toxicology of the National Research Council. He is Chair of the CASAC Lead Review Panel. In recent years, he has served on an EPA Science Advisory Board panel on expert elicitation, an EPA Advisory Council on Clean Air Compliance Analysis panel on EPA's Report to Congress on Black Carbon, National Research Council committees on review of the toxicological assessment of tetrachloroethylene and of EPA's New Source Review program, a NARSTO assessment of multipollutant air quality management, and a World Health Organization working group on uncertainty in exposure assessment. He was a lead author for 2006 guidance by the Intergovernmental Panel on Climate Change (IPCC) regarding uncertainty in greenhouse gas emission inventories. He is a Fellow and Past President of the Society for Risk Analysis and a Fellow of the Air & Waste Management Association. He received the 2008 NCSU Alumni Association Outstanding Research Award and 1999 Chauncey Starr Award of the Society for Risk Analysis. He has a B.S. in Mechanical Engineering from the University of Virginia, and from Carnegie Mellon University he has a Master of Engineering in Mechanical Engineering and Ph.D. in Engineering and Public Policy. Dr. Frey is the principal investigator of grants from the National Science Foundation and U.S. Environmental Protection Agency and contracts from the North Carolina Department of Transportation and United States Department of Transportation. He has received funding from the U.S. Department of Interior (National Park Service) via Louis Berger Group, Inc., the New Jersey Department of Environmental Protection via GbD, Inc., and the Environmental Research and Education Foundation via the University of Nebraska at Lincoln. He was a co-PI on a recently completed grant from the National Institutes of Health. These projects pertain to measurement and modeling of the activity, energy use, and emissions of vehicles and to exposure assessment.

Georgopoulos, Panos

UMDNJ-Robert Wood Johnson Medical School

Panos Georgopoulos is a professor in the Department of Environmental and Occupational Medicine at Robert Wood Johnson Medical School (RWJMS). He is also a member of the Graduate Faculties of Chemical and Biochemical Engineering, Biomedical Engineering, and of Environmental Sciences at Rutgers University, and a member of the Environmental and Occupational Health Sciences Institute (EOHSI), which is a joint project of RWJMS and Rutgers. Dr. Georgopoulos received his M.S. and Ph.D. Degrees in Chemical Engineering from the California Institute of Technology (Caltech) and his Dipl. Ing. Degree from the National Technical University of Athens. At EOHSI he directs the Computational Chemodynamics Laboratory (ccl.rutgers.edu), a research facility for informatics and source-to-dose-to-effect modeling studies of environmental and occupational health problems. Also at EOHSI, he currently directs the State-funded Ozone Research Center (ORC) as well as the Bioinformatics and Computational Toxicology Core of the National Institutes of Environmental Health Sciences (NIEHS)-funded Center for Environmental Exposures and Disease (CEED). Dr. Georgopoulos' research over the past 30 years has involved the development and application of computational methods and tools for multiscale modeling of physical and chemical processes taking place in interacting environmental and biological systems. The overall aim of this research is to improve the understanding and quantification of human exposure and mechanism-based dosimetry, toxicokinetics, and biological response (toxicodynamics) to xenobiotics, including particulate and gaseous air pollutants, such as air toxics and the interacting components of photochemical air pollution systems. Dr. Georgopoulos has implemented the developments of this research in the graduate programs of Rutgers and RWJMS and has developed innovative courses in modeling and informatics related to environmental health applications. In these programs he has been primary doctoral thesis advisor to 20 students, and has been mentor to 24 post-doctoral fellows. Dr. Georgopoulos has lectured as invited speaker at various US and European universities and has published over 130 peer-reviewed articles and chapters in scientific journals, books and proceedings; he has also authored or co-authored several State and Federal Government Documents and technical reports. He has received awards and honors from professional societies, such as the International Society of Exposure Science (ISES) and the International Society for Environmental Epidemiology (ISEE), as well as by governmental organizations and by industry. He has participated in many national and international scientific and technical committees and panels, and served, among many other positions, as Co-Director of the USEPA-funded Environmental Bioinformatics and Computational Toxicology Center (ebCTC), a research consortium of UMDNJ-RWJMS, Princeton University, Rutgers University and United States Food and Drug Administration's Center for Toxicoinformatics, and as Chair of the United States Department of Energy (USDOE)-funded Center of Expertise in Exposure Assessment of the Consortium for Risk Evaluation with Stakeholder Participation (CRESP). Dr. Georgopoulos has received research funding from Federal, State and private agencies, including the Agency for Toxic Substances and Disease Registry /Centers for Disease Control and Prevention, the National Institutes of Health, the National Institute of Occupational Safety and Health, the New Jersey Department of Environmental Protection, the New Jersey Department of Health and Senior Services, USDOE, USEPA, and others.

Goodman, Julie

Gradient

Julie Goodman, PhD DABT is an epidemiologist and board-certified toxicologist specializing in human health risk assessment. She is a Principal at Gradient, an environmental consulting firm that specializes in human health risk assessment and the fate and transport of chemicals in the environment, and an adjunct faculty member in the Department of Epidemiology at the Harvard School of Public Health. She received an S.B. degree in environmental engineering from the Massachusetts Institute of Technology in 1996 and an Sc.M. in epidemiology and a Ph.D. in environmental health sciences/toxicology from the Johns Hopkins Bloomberg School of Public Health in 2001 and 2002, respectively. From 2002 to 2004, she was a Cancer Prevention Fellow at the National Cancer Institute. In 2004, she joined Gradient. Dr. Goodman's consulting practice consists of assessing human health risks from chemicals in the environment and consumer products. Her primary responsibilities at Gradient include the analysis and interpretation of epidemiology and toxicology data, apparent disease clusters, and chemical exposures, particularly in weight-of-evidence analyses. She has done considerable work evaluating the shape of dose-response curves at low doses, the toxicological significance of functional changes, and the use of epidemiology and toxicology data to address questions regarding appropriate dose-response models and the identification of responses at ambient exposures. For the past several years she has been analyzing epidemiology studies of nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Several of these analyses have been published in peer-reviewed journals. Dr. Goodman often advises various organizations on issues relating to toxicology, epidemiology, risk assessment, and public health. As of 2008, she is an elected member of the Board of Health in Canton, Massachusetts. She is also a member of the Massachusetts Medical Reserve Corps and the Massachusetts Environmental Justice Assistance Network. She served on an expert external peer review panel for the Development Support Document for Nickel and Inorganic Nickel Compounds, Preliminary Draft, May 2009 for the Texas Commission on Environmental Quality (TCEQ). In May 2012, Dr. Goodman served as an invited panel member at the EPA workshop, "Using Mode of Action to Support the Development of a Multipollutant Science Assessment." Dr. Goodman has been active in the Society of Toxicology for many years. She was the treasurer/secretary of the Risk Assessment Specialty Section and was an elected member of the Nominating Committee. She has been a board member of the American College of Epidemiology since 2010. She is also an active member of the Society for Risk Analysis. Dr. Goodman teaches a graduate course, entitled "Research Synthesis & Meta-Analysis," at the Harvard School of Public Health. In 2012, Dr. Goodman received the International Dose-Response Society Outstanding New Investigator Award.

Harkema, Jack

Michigan State University

Dr. Jack R. Harkema, DVM, PhD, DACVP is a University Distinguished Professor of Pathobiology at Michigan State University in East Lansing, MI. Dr. Harkema received a DVM (veterinary medicine) from Michigan State University (MSU) and a PhD (comparative pathology) from the University of California, Davis (UCD). After completing a National Institutes of Health (NIH)-sponsored research/residency training program in comparative pathology and toxicology at the UCD, Dr. Harkema joined the scientific staff at the Lovelace Inhalation Toxicology Research Institute in Albuquerque, NM in 1985 as an experimental and toxicologic pathologist. He later became the institute's project manager for pathogenesis research. In 1994, Dr. Harkema joined the faculty of the Department of Pathobiology and Diagnostic Investigation in the College of Veterinary Medicine at MSU. His primary research is designed to understand the pathobiology and toxicologic mechanisms underlying the health effects of outdoor and indoor air pollutants. In 2011, he became the director of the Great Lakes Air Center for Integrated Environmental Research, one of four US EPA-funded Clean Air Research Centers in the nation. Dr. Harkema has authored or co-authored over 200 peer-reviewed scientific publications and has served on several science advisory committees, including those for the National Institute of Environmental Health Sciences, the National Toxicology Program, EPA, and the National Academy of Sciences. Besides training graduate students, residents, and postdoctoral fellows in biomedical research, Dr. Harkema also moderates didactic courses in advanced general pathology, integrative toxicology, and pulmonary pathobiology. Dr. Harkema is a diplomate of the American College of Veterinary Pathologists and a member of the Society of Toxicologic Pathologists, the Society of Toxicology, and the American Thoracic Society. He currently receives research funding through grants or contracts from a variety of sources that include the following: the US EPA to explore and elucidate the health effects of multi-pollutant atmospheres in the Great Lakes region and to investigate the nasal toxicology and pathology of chlorine; the NIH to study the respiratory toxicology and pathology of engineered nanoparticles and the hepatotoxicity of acetaminophen; the American Chemistry Council to study the nasal pathology and toxicology of inhaled olefin compounds in laboratory rats; and the American Beverage Association to study the pulmonary pathology and toxicology in mice orally exposed to various chemical compounds.

Hung, Wilfred

Independent Consultant

Dr. Hung is currently an independent consultant. Clients he served include USEPA, California Energy Commission and various industrial companies. He has B.S., M.S. and Ph.D. degrees all in mechanical engineering with strong background in theoretical, experimental as well as computational methods. He has 2 years of research experience in the development of a computer program for the design of advanced hybrid rockets under the National Aeronautics and Space Administration (NASA) contracts. He spent 6 years at Westinghouse Electric Corporation in the development of low emissions combustion systems for industrial gas turbines. A successful oxides of nitrogen (NOx) emission model was developed. He then spent 22 years at Solar Turbines Incorporated in the development of combustion systems for low emissions and systems to burn alternate fuels. He developed Predictive Emission Monitoring System (PEMS) in place of Continuous Emissions Monitoring System (CEMS) to continuously monitor NOx emissions from Solar's industrial gas turbines. He is the author or co-author of more than thirty technical papers on Predictive Emission Monitoring System, NOx and carbon monoxide emissions, emissions control, measurement uncertainty, alternate fuels for gas turbine applications, combustion processes, and mathematical modeling. He is a Life member of the American Society of Mechanical Engineers (ASME), member of the Air & Waste Management Association, ASME B133 Committee, and, ASME Combustion, Fuels & Emissions Committee.

Jerrett, Michael

University of California, Berkeley

Dr. Michael Jerrett is an internationally recognized expert in Geographic Information Science for Exposure Assessment and Spatial Epidemiology. He is a professor in and the chair of the Division of Environmental Health Science, School of Public Health, University of California, Berkeley. Dr. Jerrett earned his PhD in geography from the University of Toronto (Canada). For the past 15 years, Dr. Jerrett has researched how to characterize population exposures to air pollution and built environmental variables, the social distribution of these exposures among different groups (e.g., poor vs. wealthy), and how to assess the health effects from environmental exposures. He has published some of the most widely cited papers in the fields of Exposure Assessment and Environmental Epidemiology in leading journals, including *The New England Journal of Medicine*, *The Lancet*, and *Proceedings of the National Academy of Science of the United States of America*. Although he has investigated many health outcomes, he has focused on the long-term effects of air pollution on cardio-respiratory diseases. Over the decade, Dr. Jerrett has also studied the contribution of the built and natural environment to sedentary lifestyles and obesity. Dr. Jerrett is currently funded by the U.S. National Institutes of Health and the European Commission on studies that use cell-phone sensors to obtain personal monitoring information on physical activity, air pollution, and geographic location. He is also funded by the Centers for Disease Control and Health Canada to develop new methods for Spatial Epidemiology. In 2009, the United States National Academy of Science appointed Dr. Jerrett to the Committee on "Future of Human and Environmental Exposure Science in the 21st Century." The Committee recently concluded its task with the publication of a report entitled "Exposure Science in the 21st Century: A Vision and a Strategy."

Kaufman, Joel

University of Washington

Dr. Kaufman is a physician-epidemiologist, board-certified in internal medicine and occupational medicine. A graduate of the University of Michigan (B.A., M.D.) and the University of Washington (MPH), he has been a full-time faculty member at the University of Washington (UW) since 1997. He is currently Professor in the departments of Environmental & Occupational Health Sciences, Medicine, and Epidemiology, and the Director of the UW's Occupational and Environmental Medicine Program. His current research activities are primarily focused on environmental factors in cardiovascular and respiratory disease. He is the principal investigator of a major epidemiological prospective cohort study of air pollution and cardiovascular disease (The Multi-Ethnic Study of Atherosclerosis and Air Pollution, or "MESA Air"). He directs the UW Northlake Controlled Exposure Facility, a facility customized for experimental inhalation toxicology studies on health effects of combustion-derived pollutants including diesel exhaust. He is also principal investigator of a National Institutes of Health-funded Specialized Center for Research at the University of Washington on Cardiovascular Disease and Traffic-Related Air Pollution. Dr. Kaufman's research integrates the disciplines of epidemiology, exposure sciences, toxicology, and clinical medicine.

Kinney, Patrick

Columbia University

Dr. Kinney has a broad background in environmental health sciences, with specific training and expertise in exposure assessment, respiratory health and climate change. He completed his doctoral studies in Environmental Science and Physiology at the Harvard School of Public Health in 1986. As a junior faculty member at New York University, he developed and led epidemiologic research on lung function and inflammatory biomarker changes in relation to chronic exposures to ozone and other air pollutants. Moving to Columbia in 1994, he expanded his research to include community-based studies of traffic pollutant exposures and health outcomes in underprivileged neighborhoods in New York City, leading and contributing to several large-scale studies over the following 18 years. He has contributed to the periodic reviews of the National Ambient Air Quality Standards for ozone and particulate matter, and served on the EPA Clean Air Scientific Advisory Committee for the most recent reviews of the Nitrogen Dioxide and Sulfur Dioxide standards. Currently he directs a National Institute of Environmental Health Sciences (NIEHS)-funded study of respiratory biomarker responses to personal exposures to traffic-related air pollutants among NYC children. This builds on his previous NIEHS-funded project "Traffic Related Particle Exposures Among NYC Adolescents" which demonstrated acute symptomatic responses to traffic pollutant exposures. He also directs ongoing research on indoor and outdoor air quality and health in Africa, including a randomized stove trial in Ghana funded by NIEHS. Other fundings sources include the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, and the United States Department of Transportation.

Kleinman, Michael T.

University of California, Irvine

Dr. Michael T. Kleinman is a Adjunct Professor of Occupational and Environmental Medicine in the Department of Medicine at the University of California, Irvine (UCI), with a joint appointment in the Program in Public Health. He was previously employed by the U.S. Atomic Energy Commission (AEC) as an environmental scientist and he directed the Aerosol Exposure and Analytical Laboratory at Rancho Los Amigos Hospital in Downey, CA. He is a toxicologist and has been studying the health effects of exposures to environmental contaminants 40 years. He holds a M.S. in Chemistry (Biochemistry) from the Polytechnic Institute of Brooklyn and a Ph.D. in Environmental Health Sciences from New York University. He is the Co-Director of the Air Pollution Health Effects Laboratory at UCI. He has published 115 articles in peer-reviewed journals dealing with environmental contaminants and their effects on cardiopulmonary and immunological systems and on global and regional distribution of environmental contaminants including heavy metals and radioactive contaminants from nuclear weapons testing. He has directed more than 50 controlled exposure studies of human volunteers and laboratory animals to ozone and other photochemical oxidants, carbon monoxide, ambient particulate matter (PM) and laboratory-generated aerosols containing chemically or biologically reactive metals such as lead, cadmium, iron and manganese. He has served on two National Academy committees to examine issues in protecting deployed U.S. Forces from the effects of chemical and biological weapons. Dr. Kleinman's current research focuses on neurological and cardiopulmonary effects of inhaled particles, including nanomaterials and ultrafine, fine and coarse ambient particles in humans and laboratory animals. His recent health effects studies have the role of inhaled combustion-generated particles on the promotion of airway allergies and acceleration of development of cardiovascular disease and how these effects are mediated by organic and elemental carbon components of PM. Dr. Kleinman's current research grants and contracts include a grant to examine the effects of inhaled particles on brain stem cells related to tumor development from the California Brain and Lung Tumor Foundation, a contract from the California Environmental Protection Agency to study the role of semi-volatile components of fine and ultrafine PM on cardiac function and atherosclerosis, and a contract to examine the effects of long term inhalation exposure to concentrated fine particles on brain inflammation. Dr. Kleinman is a member of the Board of Scientific Counselors, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention (CDC). Dr. Kleinman has previously served on the U.S. EPA Clean Air Scientific Advisory Committee (CASAC) Ozone panel and currently serves as the Chair of the California Air Quality Advisory Committee. Dr. Kleinman's current research focuses on neurological and cardiopulmonary effects of inhaled particles, including nanomaterials and ultrafine, fine and coarse ambient particles in humans and laboratory animals. His recent health effects studies have the role of inhaled combustion-generated particles on the promotion of airway allergies and acceleration of development of cardiovascular disease and how these effects are mediated by organic and elemental carbon components of PM. Dr. Kleinman's current research grants and contracts include a grant to examine the effects of inhaled particles on brain stem cells related to tumor development from the California Brain and Lung Tumor Foundation, a contract from the California Environmental Protection Agency to study the role of semi-volatile components of fine and ultrafine PM on cardiac function and atherosclerosis, and a contract to examine the effects of long term inhalation exposure to concentrated fine particles on brain inflammation.

Larson, Timothy V.

University of Washington

Dr. Timothy Larson is a Professor in the Department of Civil and Environmental Engineering at the University of Washington. He is also an adjunct Professor in the Department of Occupational and Environmental Health Sciences at the University of Washington. Dr. Larson holds a B.S. in Chemical Engineering from Lehigh University (1968), and an M.S.Ch.E. (1972) and Ph.D. (1976) from the University of Washington. He is currently the holder of the Alan and Inger Osberg Endowed Chair in Civil and Environmental Engineering at the University of Washington. Dr. Larson is a member of the Air and Waste Management Association, the International Society of Exposure Analysis and the American Association for Aerosol Research. His expertise is in characterization of urban air pollution, exposure assessment of airborne particles and gases, and source/receptor relationships of ambient air pollutants. Dr. Larson major focus in recent years has been on assessment of human exposure to outdoor generated air pollutants. Dr. Larson has previous served as a member of U.S. Environmental Protection Agency (EPA)'s Advisory Council on Clean Air Compliance Analysis (COUNCIL) and EPA's advisory committee on Indoor Air Quality/Total Human Exposure. In addition, he served on the EPA Science Advisory Board as a member of the Health and Ecological Effects Subcommittee and the Air Quality Modeling Subcommittee. Dr. Larson's research has been supported by grants from both government agencies and private companies, with core grant research support primarily being from the federal, state and local government (U.S. Environmental Protection Agency, National Science Foundation, National Institutes of Health, National Institute of Environmental Health Sciences, Washington State Department of Ecology, and Puget Sound Clean Air Agency) with additional grant support from state and local governments, industry, and foundations.

Orlov, Alexander

Stony Brook University

Dr. Alexander Orlov is an Assistant Professor of Materials Science and Engineering at State University of New York, Stony Brook, USA. He is also a faculty member of the Consortium for Interdisciplinary Environmental Research and affiliate faculty of Chemistry Department. His major research and teaching activities are in evaluation of hazardous materials interactions with various environmental interfaces; air quality issues; energy and environment; risk assessment of hazardous substances and nanomaterials; physicochemical methods of water and air treatment; sustainable energy, and green chemistry and engineering. Dr. Orlov has five degrees from various European and the US institutions, including: Doctoral and Master's degrees in Physical and Environmental Chemistry from the University of Cambridge (UK) and Master's degree in Environmental Engineering from the University of Michigan. He also holds Diploma in Economics from the London School of Economics. Dr. Orlov's research is supported by the National Science Foundation (NSF), the State of New York, the Department of Education and industry. In 2007 Dr. Orlov was appointed by the UK Secretary of State to advise the Government on such environmental issues as risk assessment of hazardous substances and environmental impact of nanotechnology. He was reappointed in 2011. Dr. Orlov is the first ever US based advisory committee member and was the author of numerous risk assessment reports to the UK government. Among his current activities Dr. Orlov contributes to the work of the United Nations Environmental Program as a Lead Author for the Global Environmental Outlook (GEO) report. He also contributes to activities of the UK Parliamentary and Scientific Committee, as first ever US based member; as well as to activities of the Environmental Chemistry Division of the American Chemical Society, as a Member-at-Large (elected position) and organizer of several symposia. He is reviewer of grant proposals submitted to over 13 US (including 4 NSF programs), Canadian and European governmental funding agencies. His current research is funded by the National Science Foundation.

Sarnat,Jeremy

Emory University

Dr. Jeremy A. Sarnat is currently an Associate Professor of Environmental Health at the Rollins School of Public Health of Emory University. He holds an Sc.D. in Environmental Health from Harvard University. Dr. Sarnat's research focuses primarily on characterizing exposures to urban air pollution in various populations, in particular panels of sensitive cohorts such as children, older adults and individuals with cardiorespiratory disease. Much of his work examines how exposure science informs environmental epidemiology; the impact of exposure misclassification and confounding on air pollution epidemiologic findings; and the application of these findings towards the development of novel spatiotemporal models of personal air pollution exposures. Currently, Dr. Sarnat is the Principal Investigator of a large scale panel study investigating in-vehicle multi-pollutant exposures in cohorts of healthy and asthmatic car commuters and corresponding acute cardiorespiratory response funded by the US Environmental Protection Agency as part of the Clean Air Research Center (CLARC) program. Recently, he was awarded the 2011 Joan M. Daisey Outstanding Young Scientist Award by the International Society of Exposure Science. Prior to entering academia, Dr. Sarnat worked as staff scientist for 4 years at the Israel Union for Environmental Defense in Tel Aviv, a non-profit organization of scientists and lawyers promoting sustainable development and pollution prevention. Dr. Sarnat also holds a Visiting Fellowship within the National Center for Environmental Health at the Centers for Disease Control and Prevention.

Schlesinger,Richard

Pace University

Richard B. Schlesinger is Associate Dean for Academic Affairs and Research in the Dyson College of Arts and Sciences of Pace University, in New York, NY. He is also Professor of Biology and Environmental Science. Dr. Schlesinger has published extensively in the areas of respiratory toxicology of ambient air pollutants, especially related to the deposition of inhaled particles and the relationship of both particulate and gaseous air pollutant exposure to the pathogenesis of non-neoplastic pulmonary diseases. His research was supported by various sources, including NIEHS, USEPA, NIOSH, HEI, Electric Power Research Institute and NIOSH. He was recipient of the Society of Toxicology Inhalation Specialty Section Career Achievement Award, the ILSI Morgareidge Award for achievement in Inhalation Toxicology, and the Herbert Stokinger Award for contributions to the field of industrial and environmental toxicology. He has served on numerous National Academy of Science committees, including the Committee on Research Priorities for Airborne Particulate Matter, the Committee on Gulf War and Health III, and the Committee on Acute Exposure Guideline Levels. He has served as consultant to various governmental agencies, contributing to USEPA Air Pollutant Criteria Documents, and WHO, to the Clean Air for Europe group air quality documents. He has served as a member of the USEPA CASAC Review Panel for NOx and SOx. He is an Associate Editor of the journal, Inhalation Toxicology, and a Fellow of the Academy of Toxicological Sciences.

Sheppard,Elizabeth A. (Lianne)

University of Washington

Dr. Elizabeth A. (Lianne) Sheppard, PhD is professor of biostatistics and environmental and occupational health sciences at the University of Washington. She holds a B.A. in psychology and a Sc.M. in biostatistics from Johns Hopkins University, and a Ph.D. in biostatistics from University of Washington. Her research interests focus on understanding the health effects of environmental and occupational exposures with particular emphasis on statistical methods for environmental and occupational epidemiology. She actively collaborates on a variety of research projects in the environmental and occupational health sciences and leads the statistical analyses for the Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air) study, a 10-year study funded by EPA to determine the effect of long-term air pollution exposure on subclinical progression of cardiovascular disease. Dr. Sheppard directs a program for quantitative training in the environmental health sciences. She is a fellow of the American Statistical Association and a member of the editorial board for Epidemiology. She serves on the Health Effects Institute's Review Committee, the EPA Science Advisory Board ad hoc committee for Toxicological Review of Libby Amphibole Asbestos, and has served on Clean Air Scientific Advisory Committee Special Panels.

Sistla,Gopal

Consultant

Dr. Gopal Sistla is a former Director of the Bureau of Air Research in the New York State Department of Environmental Conservation. Dr. Sistla served the Department for 35 years in air quality modeling and analysis and retired in 2010. He is currently a consultant in the field of air quality. Dr. Sistla holds a B.Sc. and M.Sc. in Nuclear Physics from Andhra University, Waltair, India and a Ph.D. in Astronomy and Space and Sciences from State University of New York at Albany. He has extensive experience in application of air quality models in regulatory assessment and analysis to address State Implementation Plan requirements. Dr. Sistla was the principal modeler for the Northeast States as part of the Northeast Ozone Transport Commission and provided technical support in the EPA sponsored Ozone Transport Assessment Group (OTAG). Dr. Sistla has published in several peer reviewed journals and was a guest editor for the Journal of Environmental Pollution (2003), and has participated as a reviewer for the EPA STAR programs. For over a decade, Dr. Sistla was associated with the Energy, Monitoring and Environmental Planning (EMEP) program of the New York State Energy and Research Development Authority (NYSERDA) as a member of the science advisor group (SAG) and policy advisory group (PAG). Dr. Sistla has also provided technical support in the development and implementation of the New York State Acid Deposition Control Act (SADCA).

Suh, Helen

Northeastern University

Dr. Helen Suh is an Associate Professor of Environmental Health in the Bouve College of Health Sciences at Northeastern University. She is also a Senior Fellow at the National Opinion Research Center (NORC) at the University of Chicago and an adjunct senior lecturer at the Harvard School of Public Health. Dr. Suh is an expert in air pollution exposure assessment, measurements, and environmental epidemiology. She is currently or has served as the Principal Investigator or Co-Investigator on numerous exposure and health studies, including those to characterize multi-pollutant exposures and their impacts on health, to examine cardiovascular health effects from air pollution, to develop GIS-based spatio-temporal models to estimate chronic particulate exposures, and to quantify exposure error. Dr. Suh currently receives funding from the National Institutes of Health (NIH) for studies examining the chronic health effects from air pollution exposures and evaluating data linkages for the National Children's Study. She also receives funding from the Electric Power Research Institute (EPRI) to examine multiple pollutant impacts on hospital admissions. Previously, Dr. Suh was the Co-Principal Investigator of the Harvard-EPA Particle Health Effects Center study of the Normative Aging Study cohort and the Principal Investigator of the Exposure Core of a National Institute of Environmental Health Sciences (NIEHS) funded Program Project on Particle Exposures and Cardiovascular Health Effects. Dr. Suh has performed advisory work in environmental sciences for numerous international, national, and local organizations. In addition to her work on CASAC, she is currently a member of the Institute of Medicine Committee to Review the Health Effects in Vietnam Veterans of Exposure to Herbicides and is an Associate Editor of the Journal of Exposure Science and Environmental Epidemiology. Dr. Suh received a SB in biology from the Massachusetts Institute of Technology, and an MS and Sc.D. in environmental health sciences from the Harvard School of Public Health.

Wyzga, Ronald

Electric Power Research Institute

Dr. Ronald Wyzga is Technical Executive in the Air Quality Health Effects program area of the Environment Sector. He received an AB degree in mathematics from Harvard College in 1964 and an M.S. degree in statistics from Florida State University in 1966. He also received a Sc.D. degree in biostatistics from Harvard University in 1971. Dr. Wyzga has authored an extensive list of publications on his research. His current research activities focus on understanding the relationship between health effects and air pollution, an area in which he has worked for over 30 years. Dr. Wyzga is particularly interested in the design, conduct, and interpretation of epidemiological studies that examine this relationship. He is also interested in health risk assessment methods. Dr. Wyzga has studied the relationship between health effects and air pollution since he joined EPRI in 1975. In addition, he has worked on methods to attach economic values to air pollution damage and effects. Dr. Wyzga has served on, and has chaired, several committees for the EPA Science Advisory Board and National Academy of Sciences. He has also served on advisory oversight committees for several research programs on the health effects of air pollution. In 1990, Dr. Wyzga was elected a Fellow of the American Statistical Association by his peers. Prior to joining EPRI, he worked at the Organization for Economic Cooperation and Development (OECD) in Paris, where he co-authored a book on economic evaluation of environmental damage.

Zhang, Junfeng (Jim)

University of Southern California

Dr. Zhang is a Professor of Environmental and Global Health in the Department of Preventive Medicine at University of Southern California. He received a PhD in Public Health and Environmental Sciences jointly from Rutgers University and University of Medicine and Dentistry of New Jersey, a MS in Environmental Sciences from Rutgers, a MS in Atmospheric Chemistry and a BS in Applied Chemistry both from Peking University. Dr. Zhang's research interests include developing novel biomarkers of human exposure and health effects, assessing health and climate co-benefits of air pollution interventions, and examining biological mechanisms by which environmental exposures exert adverse health effects. Exposures occurring in the indoor environment have been an important component of the broad spectrum of Dr. Zhang's research topics. He has coauthored more than 130 peer-reviewed publications. His laboratory uses analytical chemistry tools to measure environmental chemicals, their metabolites, DNA-adducts, and protein-adducts. Dr. Zhang has led a number of international collaborative efforts to study air pollution health effects and underlying pathophysiological mechanisms. He is leading two multidisciplinary centers investigating the potential health impact of engineered nanomaterials.