Invitation for Public Comment on the List of Candidates
For the Environmental Protection Agency's
Clean Air Scientific Advisory Committee

June 11, 2018

The U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Staff Office announced in a Federal Register Notice on March 21, 2018, (83 FR 12383-12384) that it was inviting nominations of experts to be considered for the Administrator's appointment to the Clean Air Scientific Advisory Committee (CASAC). The CASAC provides independent advice, information and recommendations to the EPA Administrator on the scientific and technical aspects of air quality criteria and National Ambient Air Quality Standards (NAAQS). The SAB Staff Office sought nominations of experts to serve on the CASAC with expertise in: Air quality, biostatistics, ecology, environmental economics, environmental engineering, epidemiology, exposure assessment, medicine, risk assessment, and toxicology.

The SAB Staff Office received nominations for the attached 36 candidates based on their expertise and willingness to serve. We hereby invite public comments on the attached List of Candidates under consideration for appointment to the CASAC. Comments should be submitted to Mr. Aaron Yeow, Designated Federal Officer, at yeow.aaron@epa.gov no later than **July 2, 2018**. E-mail is the preferred mode of receipt. Please be advised that public comments are subject to release under the Freedom of Information Act.

FY19 Chartered CASAC Annual Membership

Berrocal,Veronica

University of Michigan

Dr. Veronica J. Berrocal is Associate Professor of Biostatistics at the University of Michigan. Her expertise and research interests are in spatial and environmental statistics and biostatistics, with a particular interest on development and application of statistical methods for environmental exposure risk assessment, particularly air pollution, weather and climate modeling, and their impact on health. Dr. Berrocal has also investigated assessment of the National Ambient Air Quality Standard for ozone using spatial statistical models and data from monitoring sites and an air quality model. Dr. Berrocal is the current core co-leader of the Integrated Health Sciences Core of the University of Michigan NIEHS-funded P30 center MLEEaD – Michigan Lifetime Environmental Exposure and Disease. She has also been and is co-Investigator on various NIH-funded and NSF-funded research projects investigating the effect of the physical and built environment on health, the impact of climate change on health, as well as studies on rheumatic diseases, brain cancer, and reproductive health among others. She has served as ad-hoc member of the EPA Federal Insecticide, Fungicide and Rodenticide Act Scientific Advisory Panel in December 2014, May 2015, and November 2017, and has served as member of an External Peer Review panel for EPA on the "Environmental Relative Moldiness Index (ERMI)" (October 2016) and on "Significant Impact Levels (SILs) for ozone and fine particle pollution" (September 2016). She is a member of the American Statistical Association (ASA), the International Society for Bayesian Analysis (ISBA), the International Biometrics Society (IBS), and the Association for Women in Mathematics. She has been the Chair of the Section on "Statistics and the Environment" of the American Statistical Association in 2017, and she is currently the Program Chair Elect for the Section of "Statistics in Epidemiology" of the American Statistical Association. Prior to joining the University of Michigan as faculty in 2010 as Assistant Professor, Dr. Berrocal earned a Ph.D. in Statistics at the University of Washington in 2007, was a postdoctoral research associate at the NSF-funded Statistical and Applied Mathematical Sciences Institute (SAMSI) in academic year 2009-2010, a postdoctoral fellow at Duke University, in the Department of Statistical Science and in the Children Environmental Health Initiative (CEHI) center in academic year 2008-2009, and a National Research Council postdoctoral research associate at the U.S. Environmental Protection Agency in the National Exposure Research Laboratory (NERL) in academic year 2007-2008. As a postdoc at EPA-NERL, Dr. Berrocal has developed spatial statistical models to combine data from monitoring sites and outputs from an air quality model (the Community Multiscale Air Quality – CMAQ) to generate improved estimates of air pollution concentration at fine spatial scale. These models, called downscaler and data fusion models, have been presented in several scientific journals, are highly cited and have been used in various epidemiological studies to assess the health impact of ambient and personal exposure to air pollution.

Burke,Thomas

Johns Hopkins Bloomberg School of Public Health

Thomas A. Burke is a Professor at The Johns Hopkins Bloomberg School of Public Health, Department of Health Policy and Management, with joint appointments in the Department of Environmental Health Sciences and the School of Medicine Department of Oncology. He is also the the Director of the Johns Hopkins Risk Sciences and Public Policy Institute. Dr. Burke is Chair of the National Academy of Sciences Committee on Improving Risk Analysis and in 2006 he was named a Fellow of the Society for Risk Anaysis. His research interests include environmental epidemiology and surveillance, evaluation of population exposures to environmental pollutants, assessment and communication of environmental risks, and application of epidemiology and health risk assessment to public policy. He was Principal Investigator for the Pew Environmental Health Commission which established the framework for a national approach to environmental public health tracking. He has been awarded the Johns Hopkins Golden Apple Award for excellence in teaching three times.Before joining the University faculty, Dr. Burke was Deputy Commissioner of Health for the State of New Jersey and Director of Science and Research for the New Jersey Department of Environmental Protection. In New Jersey, he directed initiatives that influenced the development of national programs, such as Superfund, the Safe Drinking Water Act, and the Toxics Release Inventory. Dr. Burke has served as a member of the National Academy of Sciences Board on Environmental Studies and Toxicology and chaired the NAS Committee on Human Biomonitoring for Environmental Toxicants and Committee on Toxicants and Pathogens in Biosolids Applied to Land. He also served on the NAS Committee on the Toxicological Effects of Methylmercury. In 2003 he was named a lifetime National Associate of the National Academies. He was Inaugural Chair of the Advisory Committee to the Director of the CDC National Center for Environmental Health and a member of the Executive Committee of the EPA Board of Scientific Counselors. Dr. Burke received his B.S. from St. Peter's College, his M.P.H. from the University of Texas and his Ph.D. in epidemiology from the University of Pennsylvania.

Chance,Kelly

Smithsonian Institution

Kelly Chance is a Senior Physicist at the Smithsonian Astrophysical Observatory. He taught Spectroscopy and Radiative Transfer of Planetary Atmospheres as a Lecturer on Earth and Planetary Sciences at Harvard University (now Oxford University Press, ISBN 978-0-19-966210-4). He has been measuring Earth's atmosphere from balloons, aircraft, the ground and, especially, from satellites since receiving his Ph.D. in Chemical Physics from Harvard in 1978. His research specialties are measurements of the Earth's atmosphere; atmospheric composition and radiative transfer; chemical astrophysics; and molecular spectroscopy, structure and dynamics. His atmospheric measurements encompass the stratospheric ozone layer, climate-altering greenhouse gases, and atmospheric pollution. His proposal for Tropospheric Emissions: Monitoring of Pollution (TEMPO) was selected in 2012 as the first NASA Earth Venture Instrument. TEMPO will be the first space-based instrument to monitor major air pollutants across the North American continent from Mexico City to the Canadian oil sands, and from the Atlantic to the Pacific, hourly at high spatial resolution. TEMPO will be launched in about 2020-2021, sharing a ride on a commercial satellite to a geostationary orbit. TEMPO measurements of ozone, nitrogen dioxide, sulfur dioxide, formaldehyde, glyoxal, water vapor, aerosols, cloud parameters, and harmful ultraviolet radiation will enable researchers to improve emission inventories, monitor population exposure, and evaluate effective emission-control strategies. It also will provide near-real-time air quality products that will be made publicly available.

Chow,Judith

Desert Research Institute

Dr. Judith Chow holds the Nazir and Mary Ansari Chair in Science and Entrepreneurialism and is a Research Professor in the Division of Atmospheric Sciences of the Desert Research Institute (DRI) of the Nevada System of Higher Education in Reno, Nevada. Dr. Chow has led DRI's Environmental Analysis Facility since its inception in 1985. She earned her B.S. degree in Biology from Fu-Jen Catholic University in Taiwan (1974), her M.S. degree in Environmental Health Science (1983) from Harvard University, and her Sc.D. degree in Environmental Science and Physiology (1985) from Harvard University. For more than 35 years, she has conducted air quality studies and performed data analysis to improve understanding of effects of air quality on human health, visibility, historical treasures, ecosystems, and climate. Dr. Chow is currently the principal investigator for: 1) conducting organic and black carbon measurements with the U.S. Environmental Protection Agency's (EPA) Chemical Speciation Network (CSN) and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network; 2) tracking changes in air quality with control measures at the ports of Los Angeles and Long Beach; 3) investigating the chemical nature and composition of atmospheric brown carbon aerosol; and 4) evaluating nitrogen partitioning and evolution of particulate organic nitrogen in peat fire emissions. She has been principal investigator or a major collaborator in more than 50 large air quality studies (and many smaller ones) across the United States and in other countries. Dr. Chow prepared and revised sections of the EPA's PM Criteria Document pertaining to chemical analysis and source emissions and contributed to EPA guidance documents on network design, continuous particulate monitoring, and particulate matter chemical speciation. Dr. Chow's research has been sponsored by grants and contracts from the federal government (e.g., EPA, Department of Energy, Department of Interior, Department of Defense), local, state, and international air quality management authorities, industry, and the National Science Foundation. As past chair and a member of the Air & Waste Management Association's (A&WMA) Critical Review Committee, Dr. Chow has coordinated and evaluated Critical Reviews and Discussions on environmental science and technology topics. She was chair of the Publications Committee for the Journal of the Air & Waste Management Association and serves on Editorial Boards and/or as Associate Editor for several international journals including: the Journal of Air Quality, Atmosphere, & Health, Aerosol and Air Quality Research, Atmospheric Pollution Research, and Particuology. Dr. Chow was a member of the National Research Council's (NRC) committees on Research Priorities for Airborne Particulate Matter (1998–2003) and Energy and Air Pollution Futures in the U.S. and China (2004-2008); she also served on the NRC Board on Environmental Studies and Toxicology (2002–2005). She was a member of advisory panels for the National Environmental Respiratory Center (New Mexico) and South Coast (California) Air Quality Management District. Dr. Chow has been a member of EPA's Clean Air Scientific Advisory Committee (CASAC) since 2015 and CASAC's Air Monitoring and Methods Subcommittee (AMMS, formerly the Ambient Air Monitoring and Methods Subcommittee) since 2004. She is the principal author or co-author of more than 350 peer-reviewed articles and more than 90 peer-reviewed book chapters and has been recognized by ISIHighlyCited.com in ecology and environment with more than 14,500 citations of her work. Dr. Chow has received the California Air Resources Board's 2011 Haagen-Smit Clean Air Award for her contributions to air quality science and technology, the Air & Waste Management Association's 2016 Arthur C. Stern Award for Distinguished Paper and 2002 Frank A. Chambers Excellence in Air Pollution Control Award, and the 2001 Nevada System of Higher Education's Regents' Researcher Award.

Cocker III,David R.

University of California at Riverside

David R. Cocker III is a professor of Chemical and Environmental Engineering at the University of California, Riverside. He currently manages the Atmospheric Processes Laboratory at the Bourns College of Engineering, Center for Environmental Research and Technology in addition to being a UCR Honors Faculty Fellow. He received both his M.S. (1998) and Ph.D. (2001) in Environmental Engineering Science from the California Institute of Technology and double B.S. degrees in Environmental Engineering and Chemistry from the University of California, Riverside. His research expertise includes atmospheric chemistry leading to secondary organic aerosol and ozone formation, in-use characterization of a variety combustion emission sources, and the health impacts of atmospheric pollutants. Funding over the last two years has included the South Coast Air Quality Management District, California Air Resources Board, U.S. EPA (student design competitions), Coordinated Research Council, National Science Foundation, Naval Surface Warfare Center, USDA, and Honda. He has served as a technical advisor to the Western Regional Air Pollution Committee, has been an advocate for STEM education within the Riverside Unified School District, is an active member of the American Association for Aerosol Research, and is affiliated with the BREATHE center through the UCR School of Medicine.

Cohan,Daniel

Rice University

Dr. Cohan is an Associate Professor of Civil and Environmental Engineering at Rice University. His research specializes in atmospheric modeling to inform environmental decision-making and quantify the responsiveness of air pollution to emissions. Dr. Cohan received a B.A. in Applied Mathematics from Harvard University, a Ph.D. in Atmospheric Chemistry from Georgia Tech, and served as a Fulbright Scholar to Australia. He is a recipient of an NSF CAREER award and was a member of the NASA Air Quality Applied Sciences Team. Prior involvement with EPA includes serving as PI of a STAR research grant and developing advanced features for the CMAQ air quality model.

Crawford,James

NASA

Dr. James H. Crawford is a Senior Research Scientist at NASA, serving as the agency lead for tropospheric chemistry. In this capacity he provides leadership for national and international airborne field studies that collect detailed measurements of atmospheric composition to identify human and natural impacts related to gaseous and particulate pollution. These observations are critical to understanding the emissions, chemistry, and dynamics that underlie air pollution events. An important focus of Dr. Crawford's work has been to improve the interpretation and application of satellite observations for air quality through integration with surface monitoring, aircraft observations, and air quality models. In conducting these studies, Dr. Crawford has collaborated with federal and state air quality agencies in California, Colorado, Maryland, and Texas, always drawing on local advice and experience to ensure that flights are executed to advance current understanding of the unique issues faced by each locality. He currently serves on the Advisory Panel of the Texas Air Quality Research Program. He has authored over 130 peer-reviewed publications on the chemistry of the lower atmosphere including photochemical production of ozone and particulate matter, carbon monoxide and atmospheric transport, and near-surface vertical gradients in reactive nitrogen oxides, formaldehyde, and ozone production. Dr. Crawford has also coordinated special issue publications of air quality findings in EM magazine, targeted to air quality decision makers, and he has served as the atmospheric chemistry editor for the Journal of Geophysical Research-Atmospheres since 2013. A current member of the International Global Atmospheric Chemistry (IGAC) project Steering Committee, Dr. Crawford will assume the IGAC co-Chair role in 2019. Dr. Crawford was selected for a Presidential Early Career Award for Scientists and Engineers in 2001. He has also received NASA's highest honors, the Outstanding Leadership Medal, and NASA's Exceptional Achievement Medal for sustained scientific contributions to NASA's Tropospheric Chemistry Program. His current research interests include the photochemistry of tropospheric ozone and free radicals, the global budget of reactive nitrogen, the influence of clouds on trace gas transport and chemistry, and the use of satellites to study long-range pollution transport and air quality. Since 2010, Dr. Crawford has led a series of air quality focused field studies across the United States (DISCOVER-AQ) and in South Korea (KORUS-AQ) to understand local and transboundary influences on air quality and to prepare for geostationary satellite observations of air quality planned by Korea and the U.S. in the early 2020s. Dr Crawford received his Ph.D. in Atmospheric Chemistry from Georgia Institute of Technology, and his B.S. in Mathematics from the United States Military Academy.

DeFelice,Tom

In Progress

Dr. DeFelice is currently a consultant to NOAA and NASA federal service sector small businesses, while taking management courses to maintain his PMP certification. He has submitted a US Utility Patent pending application, involving the use of UAS w/autonomous, adaptive control, and on-board environmental sensors. Dr. DeFelice has a PhD in Atmospheric Science from N.C. State University, MS Atmospheric Physics from DRI/UNR, and a BS in Math and Atmospheric Science from SUNY at Albany. He has performed air quality, meteorology, atmospheric chemistry (aqueous & gas phases) measurements on an EPA project that funded his PhD work. Dr. DeFelice taught wet and gas phase atmospheric chemistry, cloud physics, remote sensing of aerosols, plus meteorological instrumentation and measurement at the University Senior/Grad student level. His university level teaching included mentoring a Graduate student who's research involved Air Pollution Control Technology development. Dr. DeFelice has authored 40+ relevant peer-reviewed publications, and a college text-meteorological instrumentation & measurement. He has been an editorial board member of Atmospheric Research since 2000, and Atmospheric and Solar-Terrestrial Physics. Dr. DeFelice's expertise and research activities are focused on atmospheric science, cloud and aerosol physics and chemistry, meteorological measurements and the effect of aerosols on atmospheric and other processes(biosphere, geosphere, hydrosphere), and the effect of cloud systems on the environment. He has over 20 years of experience relevant to air quality, mainly focused on investigating aerosol characteristics and cloud system-aerosol interactions. Dr. DeFelice led an unbudgeted full cycle validation infrastructure project created per Data Qual. Act 2000, which today still serves as a focal point for research studies and public outreach at EDC. He supported air quality studies of APHC focusing on meteorology and aerosol (chemical & physical) measurements, their analysis and their effect on soldier. Dr. DeFelice has served on advisory committees not supported by the SAB staff office and professional societies, for example, 2+ years on an International Commission for the Ministry of Agriculture, Mendoza, Ar. He also served as a member of the ARL biosafety committee for 3 yrs. Dr. DeFelice has served on the American Society of Civil Engineers, Environmental Water Resources Institute Atmospheric Water Management Standards Committee since 1994 which included serving as its chair and secretary.

Enstrom,James E.

Scientific Integrity Institute

Dr. James E. Enstrom is a retired Research Professor/Researcher from the School of Public Health and Jonsson Comprehensive Cancer Center at the University of California, Los Angeles. He is President of the Scientific Integrity Institute in Los Angeles. He received his BS in physics from Harvey Mudd College, an MS and PhD in elementary particle physics from Stanford University, and a MPH and postdoctoral certificate in epidemiology from UCLA. Dr. Enstrom has authored, primarily as first or sole author, about 50 peer-reviewed articles and book chapters on physics, epidemiology, and scientific integrity. He has received research funding from many sources, including NIH, ACS, UC, private foundations, industry sources, and personal donations. He has received no funding recently, but is still conducting original epidemiologic research by using personal assets in innovative and cost-effective ways. He has taught graduate classes on environmental health science. He has given numerous lectures on epidemiology and ethics. He has published important articles relating good health practices to reduced mortality and recently has shown that fine particulate matter (PM2.5) is not related to total mortality in the ACS Cancer Prevention Study cohorts (CPS I and CPS II). He is the only independent scientist to obtain and analyze original CPS cohort data. His research shows that the EPA PM2.5 NAAQS is scientifically unjustified and must undergo complete and objective reassessment. His Scientific Integrity Institute website contains thousands of documents on air pollution epidemiology, lifestyle epidemiology, scientific integrity, and critiques of regulations, many of which contain his own research and analysis. He understands air pollution health effects research from the perspectives of both physics and epidemiology and maintains the highest level of integrity. He is a Life Member of the American Physical Society, a Founding Fellow of the American College of Epidemiology, and a current member of the ACE Ethics Committee. In 2015 he received the Heroes of Conscience Award from the American Freedom Alliance in Los Angeles.

Fernandez,Ivan J.

University of Maine

Dr. Ivan J. Fernandez is a Professor and forest soil scientist at the University of Maine, Orono. He is a Distinguished Maine Professor and faculty member in the School of Forest Resources, the Climate Change Institute, and the School of Food and Agriculture. His expertise is in biogeochemical cycling in forested ecosystems, terrestrial-aquatic linkages, and biogeochemical responses to a changing chemical and physical climate. He is a member of numerous professional organizations such as the Society of American Foresters, Soil and Water Conservation Society, and a fellow and member of the Soil Science Society of America. He serves as a member of the National Council of Soil Science Examiners and the Maine Board of Certification for Professional Geologists and Soil Scientists. He is recognized for establishing or helping to establish several long-term ecosystem studies in Maine that include the Howland Research Forest, research watersheds in Acadia National Park, and the long-term whole ecosystem research program at the Bear Brook Watershed in Maine. He also serves as the External Science Advisor to the Hubbard Brook Ecosystem Study in New Hampshire and is the point of contact for the U.S. Department of Agriculture (USDA) Northeast Climate Hub at the University of Maine. His current research interests are in atmospheric deposition and climate change effects on forested ecosystems and watershed processes, bioenergy implications for forest management, and climate change adaptation. He was co-leader of the 2009 climate change assessment for Maine and the subsequent report Maine's Climate Future. Dr. Fernandez has funding from the U.S. Department of Agriculture, the National Oceanic and Atmospheric Administration, the Northeastern States Research Cooperative and the National Science Foundation to study acidification and recovery, climate, and nitrogen effects on long-term forest biogeochemistry.

Fine,Philip

South Coast Air Quality Management District

Philip Fine, Ph.D. is currently the Deputy Executive Officer for Planning, Rule Development & Area Sources at the South Coast Air Quality Management District (SCAQMD) in Diamond Bar, CA. He is responsible for oversight, administration, and direction of all activities of the Division, including all rulemaking functions, Air Quality Management Plan and SIP development, particulate matter and ozone control strategies, climate and energy policy, air quality modeling, meteorology and forecasting, air quality data evaluation, emissions reporting, and air toxics risk assessment. He also recently served as the Assistant Deputy Executive Officer for the Science & Technology Advancement Division in charge of all field and laboratory activities related to the AQMD ambient network of over 36 air monitoring stations, source testing, compliance testing, quality assurance, and all special air monitoring research projects. Dr. Fine has been a member of several CASAC panels, and currently serves as a member of the California Air Resources Board legislatively mandated Research Screening Committee. Prior to joining the SCAQMD, 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 50 peer-reviewed scientific publications. Dr. Fine received his Ph.D. from California Institute of Technology in Environmental Engineering Science, and his bachelor's degree in Mechanical Engineering and Materials Science & Engineering from the University of California, Berkeley.

Frampton,Mark

University of Rochester

Dr. Mark W. Frampton is Professor Emeritus in Medicine in the Pulmonary & Critical Care division, at the University of Rochester Medical Center (URMC), Rochester, NY. Dr. Frampton holds an M.D. from New York University. During pulmonary specialty training at URMC in the late 1980s, Dr. Frampton became interested in the adverse health effects of air pollution, at a time when epidemiology studies were beginning to provide strong links between ambient particulate air pollution and mortality. Working with Dr. Mark Utell and utilizing the human clinical studies facility at URMC, he expanded the focus of human clinical air pollution studies beyond pulmonary function effects to include effects on airway inflammation, host defense against viral infection, and cardiovascular effects. Dr. Frampton's laboratory was the first to conduct human clinical studies of ultrafine particles (smaller than 100 nm), first using laboratory generated elemental carbon particles, and subsequently with concentrated ambient ultrafine particles, using the Harvard ultrafine concentrator system. Over the years his laboratory has studied healthy subjects as well as those considered to have increased susceptibility, including older subjects and people with mild asthma, chronic obstructive pulmonary disease, type 2 diabetes, and even genetic susceptibility. Dr. Frampton's laboratory is one of three centers completing a study of the cardiovascular effects of ozone exposure in healthy older subjects, funded by the Health Effects Institute. These studies have helped to understand the physiological changes and pathways to adverse effects that occur in response to pollutant exposure, and have helped to inform the EPA's promulgation of rational ambient air quality standards. Funding for these studies has come from the National Institutes of Health, the U.S. EPA, the Health Effects Institute, the New York State Energy Research and Development Authority, CONCAWE, ExxonMobil, the American Petroleum Institute, and others. Dr. Frampton has served on numerous scientific review panels with the National Institutes of Health and other scientific funding organizations. He has been active in the Environmental and Occupational Health Assembly of the American Thoracic Society, serving as its Chair in 2001-2003. At the request of the ATS President at the time, Dr. Frampton chaired a Task Force on Bioterrorism, and helped to form a new Section on Bioterrorism, serving as its first Chair in 2003-2005. He recently served as a member of the ATS committee preparing a revision of the important and oft-cited document, "What Constitutes a Health Effect of Air Pollution?", which has now been published. Dr. Frampton has served as a consultant and reviewer for the Health Effects Institute, a health research organization jointly funded by EPA and the automobile industry. He is currently a member of the Science Review Committee for the Health Effects Institute. He participated in an HEI review panel on the health effects of traffic-related air pollution, and chaired an HEI Review Panel on ultrafine particles, which produced a recent HEI Perspectives, "Understanding the Health Effects of Ambient Ultrafine Particles". Dr. Frampton has served as a consultant to the EPA in developing and reviewing Integrated Scientific Assessments (formerly Criteria Documents) for nitrogen dioxide, ozone, and particulate matter. In addition, he has served on several EPA grant and fellowship review panels and scientific workshops, and has been invited to speak at EPA functions. He currently serves on the CASAC PM Review Panel.

Fritz,Patricia

New York State Department of Health

Patricia Mason Fritz, is a Research Scientist III with the Bureau of Toxic Substance Assessment in the Center for Environmental Health. She has worked for the New York State Department of Health, Center for Environmental Health in the Bureau of Toxic Substance Assessment since 1994. Prior to joining the Health Department, Pat was a Senior Research Scientist with Sterling Winthrop Research Institute, where she conducted laboratory research in the neurobehavioral effects of compounds of pharmacological interest. Pat holds Bachelor of Science degrees from Syracuse University and SUNY College of Environmental Science and Forestry, and a Masters' degree in Environmental Engineering from Rensselaer Polytechnic Institute. Ms. Fritz has represented the Health Department on multi-disciplinary review and advisory panels related to environmental health, prepared and provided technical support for testimony in administrative hearings, and served on grant and contract review panels in the areas of energy, environment, and health. She is a current member of ASHRAE, the American academy of Allergy, Asthma and Immunology (AAAAI), where she serves on the Environmental Exposure and Respiratory Health and Aerobiology Committees, the American Association for Aerosol Research (AAAR), where she serves on the Early Career Committee, and the Pan- American Aerobiology Association(PAAA). Ms. Fritz' work at NYSDOH encompasses exposure assessment and toxicological risk assessment of chemical and biological contaminants in air water and soil, criteria and hazardous air pollutants, aerosols, aerobiology, asthma, air quality, nanotechnology, mercury, and impacts from conventional and alternative energy sources. She has worked on the development and analysis of results from surveys conducted in New York State focused on asthma prevalence and exacerbation, collaborated on a study investigating pediatric exposure to mercury, and has conducted multiple investigations related to indoor and outdoor air quality in residential, school and occupational settings in NYS. In addition to her research efforts, she responds to public inquiries about health effects from chemical and biological pollution, develops and provides training on health effects of air pollutants, provides technical support to Department technical documents and initiatives, and has participated in multi-agency evaluations of environmental sampling data collected following industrial accidents, natural disasters and following the World Trade Center attacks. She is currently in the third year of a New York State Energy Research and Development Authority funded research project characterizing particulate emissions from advanced biomass-fueled appliances.

Gordon,Terry

New York University School of Medicine

Dr. Terry Gordon holds the rank of Professor of Environmental Medicine at the New York University (NYU) School of Medicine. He holds a B.S. in Physiology (1974), an M.S. in Toxicology (1976) from the University of Michigan, and a Ph.D. in Toxicology from MIT (1981), and was appointed to the faculty of the Department of Environmental Medicine in 1989. He has served as an ad hoc member of grant review panels and/or site visit teams for NIEHS, NIAID, National Coalition for Cancer Research, DOD, Bureau of Mines, NASA, Health Canada, NIOSH/CDC, and the EPA. Dr. Gordon is past Chair of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) committee, a volunteer organization that publishes occupational exposure levels that are used as workplace safety guidelines throughout the world. Dr. Gordon's broad research interest is in inhalation toxicology. The major focus of his research lab is the identification and understanding of the role of genetic host factors in the pathogenesis of the adverse pulmonary effects produced by inhaled environmental and occupational agents. Because inter-individual responses to inhaled particles and gases vary so greatly in both human subjects and test animals, Dr. Gordon has hypothesized that genetic susceptibility factors play a major role in environmental and occupational lung disease. In collaboration with a number of investigators in the department, his laboratory uses classic murine genetics models, computational genomics, and DNA microarrays to identify genes involved in the acute response as well as in the development of tolerance to repeated exposure to inhaled toxicants. Dr. Gordon also plays a major role in the particulate matter (PM) research program at NYU, and was among the first researchers to use concentrator technology to study the adverse cardiopulmonary effects of ambient PM. Dr. Gordon is an active member of the Society of Toxicology (SOT), and has served on the Program, Placement, Membership, and Awards Committees and as President of its Inhalation Specialty Section. He has served as a consultant/author to the EPA on issues of pulmonary toxicology related to the development of various documents, and served on EPA's Clean Air Scientific Advisory Committee (CASAC) Oxides of Nitrogen (NOx) and Sulfur Oxides (SOx) Primary National Ambient Air Quality Standards (NAAQS) Review Panels and is a current member of the PM ad hoc CASAC.

Hailer,Katie

Montana Tech

Dr. Katie Hailer started her education in chemistry at West Virginia University, graduating in 2001 with a B.A. in Chemistry, summa cum laude. She then went to the University of Montana for her doctoral graduate studies in bioinorganic chemistry. Under the direction of Dr. Kent Sugden, Dr. Hailer spent her time in graduate school working to elucidate the mechanism of hexavalent chromium carcinogenesis. After graduating in 2006, she accepted a one-year postdoctoral position at the Mayo Clinic in Rochester, MN. There she worked with Dr. Scott Kaufmann again focusing on mechanisms of carcinogenicity in an oncology lab. Dr. Hailer then transitioned into a faculty position, first at Winona State University from 2007-2010, and then moving to Montana Tech in 2010. Dr. Hailer currently holds the rank of tenured, Associate Professor and Department Head of Chemistry at Montana Tech. Dr. Hailer is best described as a bioinorganic chemist. Her research has always focused on metal interactions in living systems. Montana Tech is in Butte, MT which also happens to be one of the largest Superfund sites in the United States. Using the historical environmental contamination and current open-pit mining activities as inspiration, Dr. Hailer now focuses her research on measuring and identifying metals in the people that live and work in Butte, MT. Her research has been most recently funded by the National Institutes of Health INBRE grant.

Hayes,Stanley

Ramboll Environ

Mr. Stan Hayes has more than 40 years of experience in air-related environmental engineering and science for NAAQS- and air toxics-related purposes, with emphasis on air modeling analysis and health risk assessment. He has an MS degree in Aeronautics & Astronautics and a BS degree in Mechanical Engineering, both from Stanford University. Mr. Hayes is the primary author of more than 70 scientific papers and presentations, and several hundred technical reports on air-related subjects. He is a member of the EPA Science Advisory Board Risk and Technology Review (RTR) Methods Panel. He is a Fellow of the Air & Waste Management Association, for whom he has chaired or co-chaired national and international specialty conferences. He is chair of the Advisory Council of the Bay Area Air Quality Management District, which provides science-based counsel to the Board of Directors, the Executive Officer, and other senior staff. He has provided expert testimony before federal, state and local regulatory agencies and in court. For 25 years, until 2015, Mr. Hayes was a Principal with Ramboll (previously ENVIRON). He is now emeritus, with no regular salary, EPA or other grants, benefits, or firm ownership interest. Over his career, Mr. Hayes has conducted research consulting on NAAQS- and air toxics-related topics for a broad range of private- and public-sector clients, including trade associations (e.g., API and others), individual companies, law firms, and regulatory agencies (e.g., EPA and others). Relevant to the work of CASAC, he has conducted NAAQS-related air quality modeling studies, health risk assessments, exposure analyses, control strategy analyses, nonattainment area plan evaluations, air monitoring data analyses, and regulatory and policy reviews.

Hayworth,Nan

Independent Consultant

The Honorable Nan Hayworth, M.D. is a consultant and a Special Business Development Advisor for Pilot Growth Equity. She is the only female physician ever to serve as a Member of Congress, representing the 19th District of New York in 2011 and 2012. As a freshman Member of the House Majority, Congresswoman Hayworth was assigned to the House Financial Services Committee and the Majority Whip Team; she also had the honor of being chosen by Speaker Boehner to serve on two House-Senate Conference Committees. She has been recognized by many organizations, including the Sierra Club, League of Conservation Voters, Defenders of Wildlife, and Wilderness Society, for her efforts to protect the environment. A board-certified ophthalmologist, Dr. Hayworth practiced for nearly 20 years in Mount Kisco, New York, before becoming a vice president and medical director at Cline Davis & Mann, a healthcare communications agency, prior to running for Congress. She chairs the board of directors of ConservAmerica, a Republican organization dedicated to environmental protection, and she served as a primary media surrogate for EPA Administrator Scott Pruitt when he was a candidate for this position. Congresswoman Hayworth speaks on television and radio in behalf of Independent Women's Forum, the Trump campaign, and the Republican National Committee. She graduated summa cum laude from Princeton University in 1981 with a degree in Biology, subsequently graduating at the top of her class from Cornell University Medical College (now Weill Cornell Medicine) in 1985. Dr. Hayworth has not been a recipient of any research grants from the public or private sectors over the past two years.

Huang,Guanyu

Spelman College

Dr. Guanyu Huang is an assistant professor of Environmental and Health Sciences program at Spelman College. He received his B. Eng. (2008) in remote sensing science and technology from Wuhan University in China, and his M.S. (2010) and Ph. D. (2015) in Atmospheric Science from University of Alabama in Huntsville. He became a postdoctoral fellow at Harvard-Smithsonian Center for Astrophysics in 2015 and then joined Spelman college as a tenure-track assistant professor in 2017. Dr. Huang is an expert of air quality, especially in ozone and its precursors. His research interests include trace gas remote sensing, air quality modeling and observations in multiple scales, and the application of machine learning in environmental science and remote sensing. He has authored and co-authored multiple journal papers and conference papers. He teaches courses in air quality, atmospheric science and environmental science in Spelman College.

Kinney,Patrick

Boston University School of Public Health

Dr. Kinney has a broad background in environmental health sciences, with specific training and expertise in air pollution exposure assessment, epidemiology, 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 22 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 reviews of the Nitrogen Dioxide and Sulfur Dioxide standards. He developed and directed the Climate and Health Program at Columbia, which trains students and postdocs in research on the health dimensions of climate variability and change. He also directed research on indoor and outdoor air quality and health in Africa, including a randomized stove trial in Ghana funded by NIEHS. Current funding sources include the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration. In January 2017, Dr. Kinney was named the inaugural Beverly A Brown Professor of Urban Health at Boston University.

Kleinman,Michael T.

University of California, Irvine

Dr. Michael T. Kleinman is an Adjunct Professor of Toxicology in the Department of Medicine's Occupational and Environmental Medicine Division 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 has more than 40 years of experience researching the health effects of environmental contaminants. 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 more than 115 peer-reviewed journal articles on effects of environmental contaminants 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 has previously served on the U.S. EPA Clean Air Scientific Advisory Committee (CASAC) Ozone, PM and NO2 panels and was appointed to Chair the Scientific Review Panel for Toxic Substances for the state of California. 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 is a co-Investigator on grants from NIH and NSF as well as contracts from the California Brain and Lung Tumor Foundation and from the California Environmental Protection Agency to study the role of semi-volatile components of fine and ultrafine PM on cardiac function, atherosclerosis, and effects of subchronic and chronic inhalation exposures to concentrated fine particles on brain inflammation.

Lange,Sabine

Texas Commission on Environmental Quality

Dr. Sabine Lange is the section manager for the Toxicology Division at the Texas Commission on Environmental Quality (TCEQ). Dr. Lange's responsibilities include overseeing health effects risk assessments of air permit applications, ambient air monitoring projects, and hazardous waste sites; overseeing the development of chemical toxicity factors; and conducting and overseeing systematic reviews and independent analyses of risk assessments. Dr. Lange serves as a technical resource for the State and citizens of Texas for human health and environmental risk assessment, especially related to air and water quality. Dr. Lange's research interests include the toxicology of criteria air pollutants, particularly ozone dosimetry and exposure-response. In this area she has published articles, given invited talks, presented posters, and served as a workshop panel member. On behalf of the TCEQ, she has intensively reviewed the documents released by the US EPA on the National Ambient Air Quality Standards (NAAQS) for ozone, particulate matter, sulfur dioxide, nitrogen dioxide, and lead. Dr. Lange and colleagues have provided comments to the US EPA on the assessment documents supporting these standards, particularly as they relate to principles of toxicology, risk assessment, and the State's perspective on these rules. Dr. Lange's work since joining TCEQ has been entirely funded by the State of Texas.Dr. Lange received a Bachelor's degree from the University of Western Ontario in Canada, and completed a Ph.D. and post-doctoral training in biochemistry and molecular carcinogenesis at the University of Texas at Houston and MD Anderson Cancer Center. Dr. Lange is a Diplomate of the American Board of Toxicology.

Lefohn,Allen

A.S.L. & Associates, LLC

Dr. Allen S. Lefohn is currently President and Founder of A.S.L. & Associates, LLC in Helena, Montana. From 1981 until 2017, he served as President and Founder of A.S.L. & Associates, a Montana corporation. He received his Bachelor's degree from UCLA in 1966 and a Ph.D. in physical chemistry from the University of California at Berkeley in 1969. His advisor was Professor George C. Pimentel. For the period 1989 – 1999, he served as an Executive Editor of the internationally recognized journal Atmospheric Environment and is an Emeritus Editor of the Journal. Dr. Lefohn has published approximately 125 peer-reviewed publications, edited four books, presented numerous oral papers, and participated in panel presentations. During a career spanning over 50 years, his research has focused on (1) understanding the importance of background ozone in relation to ambient concentrations, (2) developing exposure-response relationships and indices that describe the effects of ozone on vegetation and human health, (3) investigating biological mechanisms that define the nonlinearity (i.e., weighting of the higher concentrations more than the mid- and low-level values) response to ozone for both human health and vegetation, and (4) integrating results from the EPA's air quality database for (a) characterizing co-occurrence patterns of criteria air pollutants under ambient conditions (e.g., ozone, sulfur dioxide, and nitrogen dioxide), (b) characterizing ozone trend patterns, and (c) designing research experiments that utilize realistic ambient exposures for assessing human health and vegetation effects. For 19 years, Dr. Lefohn has worked with the American Lung Association in characterizing ambient ozone and particulate matter data for the organization's annual State of the Air report. His research results have also been applied by the EPA. Between 2007 and 2015, EPA staff, CASAC, and the EPA Administrator considered the application of an exposure metric, the W126 exposure index, as the federal standard to protect vegetation. Dr. Lefohn created the exposure metric in 1985 with the help of the first-generation Apple Macintosh computer and described the metric in the peer-review literature in 1987 and 1988. In October 2015, the EPA Administrator announced that the 8-h ozone standard would be used as a surrogate for the protection of vegetation; the EPA continues to use the W126 metric as an indicator of the potential risk of ambient ozone exposures to vegetation. Dr. Lefohn is familiar with the EPA's rulemaking process. He was the lead consultant scientist for the EPA in authoring the air quality characterization chapter and the vegetation exposure-response section for the Ozone Criteria Document in 1996 and contributed to the Ozone Criteria Documents in 1985 and 2006. Dr. Lefohn presented testimony in March 2015 to the House Committee on Science, Space, and Technology about background ozone. In 2015, Dr. Lefohn was a co-guest editor for the Atmospheric Environment special issue: Observations and source attribution of ozone in rural regions of the Western United States. Dr. Lefohn is currently on the Steering Committee of the important international research effort, Tropospheric Ozone Assessment Report (TOAR). The project provides the international research community with an up-to-date scientific assessment of tropospheric ozone's global distribution and trends from the surface to the tropopause. Dr. Lefohn is the lead author (with 23 additional co-authors) of the TOAR paper, Global Ozone Metrics for Climate Change, Human Health and Crop/Ecosystem Research, which was published in April 2018 and is available online. Dr. Lefohn is currently an Adjunct Professor of Environmental Engineering at Montana Tech in Butte, Montana. He is a member of the AAAS. For the past two years, Dr. Lefohn's funding sources for his research activities have originated from the American Lung Association and his own company, A.S.L. & Associates.

Lewis,Timothy

U.S. Army Corps of Engineers

Tim Lewis is a supervisory research ecologist with the U.S. Army Corps of Engineer, Engineer Research and Development Center, Environmental Laboratory in Vicksburg, MS. He worked for Lockheed Engineering, primary contractor for the U.S. EPA, serving as Project Leader and Principal Scientist on studies related to the National Surface Water Survey, the Direct Delayed Response Project (soil acidification), and the Environmental Monitoring and Assessment Program (EMAP). He accepted a position with the Bureau of Land Management in 1993 and served as the National Indicator Development Coordinator for the U.S. EPA's EMAP - Forest Health Monitoring program. He edited and authored a CRC Press book entitled Tree Rings as Indicators of Ecosystem Health. He went on to become Effectiveness Monitoring Coordinator for the Northwest Forest Plan. In 1996 Tim became the first Director of the Forest Science Project at Humboldt State University, where he applied his regional aquatic and terrestrial monitoring experience to private and public lands in Northern California. In 2001, Dr. Lewis accepted a position as senior ecologist with the U.S. EPA's National Center for Environmental Assessment, where he was involved in the assessment of ecological risks due to air pollutants. He served as associate editor of the premier journal Ecological Indicators during its startup. In 2007 Tim joined the Environmental Laboratory at the USACE's Engineer Research and Development Center in Vicksburg, MS as Chief for the Aquatic Ecology and Invasive Species Branch. The branch is actively engaged in ecosystem restoration and the assessment of the impact of Corps projects on habitat for threatened and endangered species and prevention and reduction of impacts of invasive plants and animals in the nation's waterways. EducationB.A., West Chester University, West Chester, PA, 1977, Biology M.S., Rutgers University, New Brunswick, NJ, 1980, Plant Pathology Ph.D., Rutgers University, New Brunswick, NJ, 1984, Environmental Science

Masuca,Corey

Jefferson County Department of Health

Corey Masuca, PE, PhD, JD is currently the Principal Air Pollution Control Engineer with the Jefferson County Department of Health. As the leader of the Air Pollution Control Program with the Jefferson County of Health he is responsible for overseeing a staff of approximately 35 persons who responsibilities include regulating industrial sources of emissions, area and point sources of emissions such as dry cleaners/gasoline stations and open burning, respectively. In addition, he oversees the ambient air monitoring program which is responsible for measuring air contaminant concentrations within Jefferson County, Alabama to ensure compliance with healthy clean air standards set by the United States Environmental Protection Agency (USEPA). Since he graduated from Auburn University with a Bachelor of Chemical Engineering degree, he has continued to work in the environmental arena, specifically air quality and air pollution. As a student at Auburn University, he completed a cooperative education program rotation with the Tennessee Valley Authority in Muscle Shoals, Alabama where he completed stack testing of fertilizer plant residuals including stack testing equipment preparation and calibration. After he graduated from Auburn University, he was employed as an Environmental Engineer with the State of Connecticut Department of Environmental Protection where he regulated sources of air pollutant emissions and was responsible for the implementation of a major new air regulatory USEPA program as part of the 1990 Clean Air Act Amendments. Following his tenure with the Connecticut Department of Environmental Protection, he worked as a consulting engineer with the environmental consultant firm, CH2M Hill, in the Atlanta, Georgia area. With CH2M Hill, he prepared air program applications for several industrial air-polluting facilities applying for applications to operate. This involved extensive regulatory review and complex, mathematical calculations to determine compliance and/or regulatory applicability. Next, he returned to Alabama where he worked an Environmental Engineer with the Alabama Department of Environmental Management where he continued his work as an Environmental Engineer where he was responsible for permitting, determining compliance, inspecting, and initiating enforcement actions, where applicable, of industrial sources of air pollution. Finally, he was initially employed as an Air Pollution Control Engineer with the Jefferson County Department of Health where, again, his primary duties entailed permitting, determining compliance, inspection, and initiating enforcement actions of industrial sources of air pollutant emissions. While with the Jefferson County Department of Health, he continued his professional and academic pursuits where he was promoted to the position of a Senior Air Pollution Control Engineer, became a registered/licensed Professional Engineer with the State of Alabama, and obtained a doctoral degree in Environmental Health Engineering from the University of Alabama in Birmingham. His doctoral degree research consisted of completing an epidemiology study of air pollutant concentrations and pre-term birth defects for populations within Atlanta, Georgia. After obtaining his doctoral degree and while still working full-time as a Senior Air Pollution Control Engineer with the Jefferson County Department of Health, he was also employed an adjunct professor both with the University of West Alabama (where he continues to be an advisory board member for the Environmental Sciences section of the Biology Division) and with the University of Phoenix (Birmingham campus). He taught classes in environmental science, environmental ethics, and general environmental air pollution health effects with both the University of Phoenix (Birmingham campus) and the University of West Alabama. In addition, during and subsequent to this time, he acted as a professional consultant providing air pollution data and review/analyses for three (3) epidemiological studies being performed/conducted by the University of Alabama at Birmingham, School of Public Health, Department of Epidemiology, which involved determining the relationship between ambient air pollution and emergency room visits for cardiovascular disease in Jefferson County, Alabama; ambient air pollution and emergency room visits for respiratory disease among adults in Jefferson County, Alabama; and ambient air pollution and respiratory diseases in children in Jefferson County, Alabama. During and subsequent to this time, he was promoted to his current position of Principal Air Pollution Control Engineer with responsibility for all of the various components of the Health Department's Air Pollution Control Program. Following his teaching stints with the University of West Alabama and with the University of Phoenix (Birmingham campus), all the while still being employed with the Health Department, he undertook an initiative to pursue as Juris Doctorate degree from the Miles College School of Law in Birmingham. He completed his requisite law studies and recently graduated from law school (May 2018). He is still employed as the Principal Air Pollution Control Engineer with the Jefferson County Department of Health Air Pollution Control Program and is currently planning to sit for the Alabama State Bar in July 2018, after which he will continue to work at/with the Health Department in a lead scientific and administrative capacity, and, hopefully, legal capacity subsequent to passing the Alabama State Bar.

Moore, Jr.,Charles Thomas (Tom)

Western States Air Resources Council - Western Regional Air Partnership

Mr. Tom Moore works for the 15 state air agency members of the Western States Air Resources (WESTAR) Council. He is the manager of the Western Regional Air Partnership (WRAP) air quality program, a voluntary partnership of states, tribes, federal land managers, local air agencies and the U.S. EPA, whose purpose is to provide technical support to understand current and evolving regional air quality issues in the context of the Clean Air Act (CAA) and the National Environmental Policy Act (NEPA). His regional analysis and planning support work is conducted through management of a series of interrelated contractor-supported regional projects for the WESTAR and WRAP membership, related to western U.S. air quality. These diverse, complex, and highly technical projects cover ambient monitoring data analysis, emissions inventory preparation and analysis, regional photochemical grid modeling and source apportionment results, and satellite air quality data.

Morris,Vernon

Howard University

Dr. Morris is a Professor in the Department of Chemistry, Director of the Atmospheric Sciences Program at Howard University. He serves as the PI and Director of a NOAA cooperative science center for Atmospheric Sciences at Howard University. He also maintains an adjunct appointment in the Environmental Engineering Program. Dr. Morris received BS degrees in chemistry and mathematics from Morehouse College and a PhD in Earth and Atmospheric Sciences from the Georgia Institute of Technology. He has completed advanced study in Sicily (Erice), at the Lawrence Livermore National Laboratories, and as a Presidential Postdoctoral Scholar at the University of California (Davis). Beginning with an NSF CAREER award in 1997, Dr. Morris has raised more than $60M in external research funding, founded the Atmospheric Sciences Program, which is already a national leader in the production of minority PhDs in the field, and helped guide the success of multiple NOAA and NASA-funded research centers. Recent funding includes several grants from NOAA and the National Science Foundation. Dr. Morris has guided the research for more than 150 students at the graduate, undergraduate, and high school levels, published over 75 refereed papers, book chapters, and conference proceedings, ranging from quantum chemistry to the impacts of lightning in tropical Africa, and has made over 100 invited talks and national conference presentations. The research themes that guide his current research are (i) the impact of mineral dust aerosols on global atmospheric chemistry and climate, (ii) the role and influence of tropospheric aerosols on regional environmental health, and (iii) the interplay between weather phenomena (e.g. dust storms, lightning, and precipitation) and atmospheric chemistry, i.e. "chemical meteorology". Dr. Morris has won numerous academic and scientific honors and awards including being recognizedas one of the 50 Most Influential Blacks in Science and Technology in 2011, inducted as a History Maker in Science in 2012, winning the NOBCChE Henry Cecil McBay Outstanding Teacher Award (2012), a Fulbright Specialist Award (2013), elected a Fellow of the American Meteorological Society (2016), and the Charles Anderson Award of the AMS in 2017. Dr. Morris is a member of the AMS, AGU, and the National Society of Black Physicists (NSBP). He has previously served on several national advisory committees including the Department of Energy ARM Science Board (2015 – 2017), the District of Columbia STEM Advisory Council (2011 – 2014), the UNESCO steering committee for the "Application of Remote Sensing for Integrated Management of Ecosystems and Water Resources in Africa", the National Academies of Sciences Board on Atmospheric Sciences and Climate (BASC) (2005 – 2007), and Member of the NASA Earth Systems Sciences and Applications Advisory Council, (ESSAAC) (2003 – 2005).

Morris,William

Efficient Fuel Additives

Dr. Morris completed his Ph.D. and M.S. in chemical engineering at the University of Utah examining the effect of pollutants such as NOX, SOX, and particulate matter on aerosol formation in air and oxy-fired combustion. He also holds a coordinate A.B. in Physics and Environmental Studies with a minor in History from Bowdoin College. He is currently President of Efficient Fuel Additives where he provides fuel additives and technical services to promote energy efficiency, use of alternative fuels, and utilization of agricultural waste biomass resources. He is also contracted by the Wyoming Integrated Test Center (ITC) as Program Director to provide engineering and business development support services for CO2 management technologies related to the ITC. The ITC facility, which was recently completed, is a public/private venture between Basin Electric Power Cooperative, Tri-State G&T, the National Rural Electric Cooperative Association, Black Hills Power, and the state of Wyoming through the Wyoming Infrastructure Authority. The research facility can provide up to 20 MW equivalent of flue gas for post combustion CO2 capture testing as well as 5 small 0.4 MWe test bays which will host the NRG COSIA Carbon XPRIZE CO2 utilization competition.Additionally, in a consultative capacity, he has provided engineering and technical advice for to private and government entities in the U.S. and S. Korea. As an employee of ADA Environmental Solutions, he worked in the areas of mercury emissions control, CO2 capture, NOX control, and is the listed inventor on 3 issued NOX, mercury, and CO2 emissions control patents as well as other patents pending. He was also a contributing author to the oxy-fuel combustion section of the National Coal Council's report, Fossil Forward in 2015 for then Department of Energy Secretary of Energy Ernest Moniz providing an update on CO2 capture technologies. His primary area of expertise is in combustion by-product formation such as NOX and particulate matter as well as emissions controls for mercury and CO2. He has conducted basic research, small pilot research, and commercial scale demonstrations and trials of various mercury, NOX, and emissions control technologies with both private industry and universities. Previous partners have included University of Utah, University of California Berkeley, Texas A&M University, Lehigh University, Southern Company, Aspen Aerogels, The University of Akron, the Electric Power Research Institute, the National Energy Technology Laboratory, the U.S. Department of Energy and other private industry companies. In addition, he has been a peer reviewer for the journals of American Chemical Society as well as Elsevier Publishing.

Packham,Steven

Utah Department of Environmental Quality

Dr. Steven Packham is an inhalation toxicologist with 28 years of regulatory experience with the Utah Division of Air Quality. Foremost among his responsibilities has been public education and communication of the scientific basis and intent of USC Title 42, Chapter 85 (particularly Sections 7409 and 7412): To protect human health with an ample margin of safety "requisite to protect" public health. His actual regulatory experience includes: Preparation of case-specific HAPs residual risks and leaking underground storage tank vapor intrusion risk assessments. Development of State Implementation Plans. State adoption of Federal NESHAP MACT's, and annual reviews of Utah's NATA Urban Air Toxics program. His research has focused on causal biologic mechanisms of dose-dependent health effects from breathing air pollution. He has developed a model to estimate margins of safety for mobile app users based on EPA Air Quality Index (AQI) values for sensitive and normal groups who may wish to engage in fitness improvement training and enjoy physical recreational activities outdoors under fluctuating air quality conditions. Dr. Packham is an Adjunct Associate Professor in the University of Utah College of Health Sciences Department of Family and Preventative Medicine and a member of the Advisory Board of the Rocky Mountain Center for Occupational and Environmental Health in Salt Lake City. Past professional activities include: Editorial Board, Journal of Fire Sciences. Chairman, American Society for Testing and Materials (ASTM) Task Group E5.21.05. Member, Toxicity Advisory Committee National Fire Protection Association. Member, ASTM Committee on Toxic Hazard Assessment of Materials used in Transportation Vehicles. United States of America Member, Technical Advisory Committee, ISO/TC 92/SC 3. Convener: ISO Technical Committee 92, Subcommittee 3, Working Group 1 on Fire Model. United States of America Assigned Expert: ISO/TC 92/SC 3/Working Group on Bio-assays.

Pair,Benson

KBR

Mr. Benson Pair is currently the Chief Technology Engineer- Environmental for KBR, located in the Houston Office. He has held this position for 29 years, since he joined KBR, then the M.W. Kellogg Company, in 1988. Prior to joining KBR, Mr. Pair spent 16 years with Engineering Science, Inc., environmental engineers and consultants, in their Houston Office, serving as Office Manager the last five years. He graduated from Rice University with two degrees in Chemical Engineering, a B.A. and an M.Ch.E, both degrees awarded in 1972. Mr. Pair is a registered Professional Engineer in the State of Texas and a Board Certified Environmental Engineer (BCEE). He is a member of the American Institute of Chemical Engineers (AIChE), the American Academy of Environmental Engineers and Scientists (AAEES) and the Water Environment Federation. Mr. Pair has served as an officer in the Water Environment Association of Texas (WEAT) holding every office in the Southeast Texas Section. He served as Chair of the Environmental Division of the AIChE, and served on the Programming Committee of AIChE. Mr. Pair is currently the AIChE representative on the Board of Trustees of the AAEES. This marks the second time he has been asked to serve in that position. Mr. Pair has nearly 46 years of experience in Environmental Engineering, all of it spent in providing consulting and engineering services to the hydrocarbon processing industry. He has executed projects involving air pollution control, wastewater treatment and solid waste management. Mr. Pair has been responsible for all phases of a project, from site selection studies through start up and commissioning. He has conducted bench scale and pilot scale treatability studies, and designed treatment plants. Mr. Pair has completed projects located in over a dozen States and ten foreign countries, giving him a working knowledge and appreciation of the regulatory requirements of a broad range of local, state and federal agencies, as well as international lending institutions. His career began shortly after the passage of the Clean Air Act in 1970 and the Clean Water Act in 1972. Mr. Pair has followed the development of air pollution control and wastewater treatment technologies for nearly five decades, applying these technologies to achieve regulatory compliance in a cost effective manner.

Paulson,Suzanne

University of California Los Angeles

Dr. Suzanne Paulson is Professor in the Department of Atmospheric & Oceanic Sciences, and Professor in the Institute of the Environment at UCLA, where she serves as the director of the Center for Clean Air. She earned a B.A. in Chemistry from the University of Colorado, an MS in Plant Biology from the University of Illinois, and an MS and PhD in Environmental Engineering Science from the California Institute of Technology. She was an Advanced Study Program Postdoctoral Fellow at the National Center for Atmospheric Research in Boulder, Colorado. Currently she investigates the impact of aerosol particles on human health and in clouds. She is also studies the influence of the built environment (sound walls, vegetation, cityscape design and traffic control) on pollution levels in urban areas at block and sub-block scales, including. She did extensive earlier work on ozone-alkene chemistry and aerosol optical properties, and has also conducted research projects in indoor air, biofuel emissions, and bioaerosol among others. Currently Dr. Paulson serves on the Research Screening Committee for the California Air Resources Board. Until recently she also served as an Airport Commissioner for the City of Santa Monica. She is a member of the American Association for Aerosol Research, the American Association for the Advancement of Science, the American Chemical Society and the American Geophysical Union.

Randolph,Dennis A.

City of Grandview

Mr. Dennis A. Randolph, P.E. is the Public Works Director for Grandview Missouri and Adjunct Instructor at the University of Missouri – Kansas City. He holds B.S. and M.S. degrees in civil engineering from Wayne State University as well as an MPA from Western Michigan University. He previous taught at Western Michigan and Wayne State, and has been a full-time local government engineer for over 40 years. His interests span a broad range emphasizing applied research that brings results to local communities. His current emphasis area is the impact of air, noise, and water pollution on Environmental Justice communities. Currently, he is responsible for leading technical work involved with litigation concerning the administration and permitting under the Clean Air Act. In conjunction with the air quality modelling work he led an effort to study noise along a newly designated interstate road to evaluate the cumulative impacts on the same Environment Justice communities. Mr. Randolph's current research has been supported by funding from the City of Grandview; Mr. Randolph has received no external research funding for this work from either federal of state government agencies, private companies, or foundations. Over the years Randolph has led work in solid waste management, surface and groundwater pollution and management, rural and urban sewage handling and treatment, and brownfield cleanup. He has formed collaborations between university faculty and local communities to investigate a wide-range of problems and to conduct field trials. He conducted a large county-funded project to trace multiple salt plumes through a rural. He was responsible for technical review of a $100 million wastewater treatment plant upgrade and managed several large combined sewer separation projects, and community sewage lagoon upgrades. He is managing a sanitary sewer inflow and infiltration (I&I) study to identify problem areas as well as a study of storm sewer pipe condition using robotic sensors. He obtained voter-approved funding for a $15 million brownfield cleanup of several abandoned industrial sites, and two $200,000 U.S. Environmental Protection Agency cleanup grants to identify and test suburban and rural sites. He has led countywide solid waste recycling efforts, been a flood plain administrator, and led efforts to incorporate stormwater Best Management Practices in construction projects, and been responsible for soil erosion and sedimentation regulation enforcement for several communities. He has led safety studies as a Principal Investigator on Federal Highway funded research and served on several National Cooperative Highway Research Program projects. He has also provided several grants to university departments to provide funding for focused research on local government engineering problems and is currently providing funding for a study of road asset management with the University of Missouri – Columbia, Civil Engineering Department. Mr. Randolph Is a Registered Professional Engineer in four States, a Public Works Leadership Fellow (APWA), and was recently selected as one of 2015's Top Ten Public Works Officials (APWA). He is a member of several American Society of Civil Engineers (ASCE) committees including the Public Agency Peer Review Committee. His other current committee work includes the ASCE Infrastructure Resilience Division SPEED Committee, and the Institute of Sustainable Infrastructure, where the work focuses on the topics of resilience and sustainability of infrastructure. He is a Life Member of the Institute of Transportation Engineers, American Society of Civil Engineers, and Institute of Electrical and Electronics Engineers. He has written nearly ninety articles and publications including a number of peer reviewed articles. He has authored two books and been the executive editor on a third.

Sheppard,Elizabeth A. (Lianne)

University of Washington

Dr. Elizabeth A. (Lianne) Sheppard, PhD is Professor and Assistant Chair in the Department of Environmental and Occupational Health Sciences and Professor of Biostatistics 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 modeling and 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 has been lead statistician 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 NIEHS-funded program for quantitative training in the environmental health sciences. Her recent research funding comes from EPA, NIEHS, NIOSH, and the Health Effects Institute. 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, and has advised EPA through service on several Clean Air Scientific Advisory Committee special panels and Science Advisory Board ad hoc committees.

Sorooshian,Armin

University of Arizona,Department of Chemical and Environmental Engineering

Armin Sorooshian is an Associate Professor, University Distinguished Scholar, and da Vinci Fellow at the University of Arizona in the Departments of Chemical and Environmental Engineering, Hydrology and Atmospheric Sciences, and Public Health. He received his B.S. (2003) in Chemical Engineering at the University of Arizona, and a M.S. (2005) and Ph.D. (2008) in Chemical Engineering at the California Institute of Technology. Armin specializes in aerosol physics and chemistry, in addition to aerosol-cloud interactions. Armin is involved with projects including instrument development/characterization, surface/ship/airborne field measurements, and the use of data from models of varying complexity and remote sensing measurements. His sources of funding in the past two years include the Office of Naval Research, NASA, and the National Institute of Environmental Health Sciences. He is a member of the following professional societies: American Geophysical Union (AGU), American Institute of Chemical Engineers (AICHE), American Meteorological Society (AMS), and American Association for the Advancement of Science (AAAS).

Stuart,Amy

University of South Florida

Amy L. Stuart, Ph.D. is a Professor at the University of South Florida (USF) in the Department of Environmental and Occupational Health, College of Public Health. She holds a joint appointment in the Department of Civil and Environmental Engineering, and courtesy appointments in the Center for Urban Transportation Research, and the Patel College of Global Sustainability. She is also the founder and director of the Graduate Certificate Program in Environmental Health at USF. Dr. Stuart earned a BS in chemical engineering, a MS in civil engineering, and a PhD in civil and environmental engineering from Stanford University. She completed postdoctoral training at the Center for International Security and Cooperation at Stanford. Dr. Stuart leads multi-disciplinary research and teaching initiatives related to air pollution, public health, and environmental sustainability. Her research has contributed to understanding the impacts of urban design and transportation on air pollution exposures and their social distribution, the fate of volatile chemicals during cloud freezing, mercury contamination and exposures, and associations between air pollution and birth defects, resulting in over 100 scholarly publications. During the last two years, Dr. Stuart's work has been funded by the National Institute of Environmental Health Sciences and by the United States Department of Transportation. She is also a previous recipient of a National Science Foundation Career award. Dr. Stuart is professionally involved in the Association of Environmental Engineering and Science Professors, currently serving on the Lectures Committee. She is a member of the Air and Waste Management Association, including previous service as the Chair of the Student Awards Committee of the Higher Education Council, and is a member of the International Society of Exposure Sciences. She regularly serves as a reviewer of manuscripts for several scientific journals and of proposals for grant sponsors on air pollution topics.

Wagner,James

Michigan State University

Dr. Wagner is an associate professor in cardiopulmonary toxicology in the Department of Pathobiology and Diagnostic Investigation at Michigan State University. He earned a bachelor's degree in biochemistry, a master's degree in business administration in management science, and a PhD in pharmacology and toxicology. His post-doctoral training focused on comparative pathology and air pollutant exposure. Current research efforts are focused on conducting translational studies to understand the mechanisms of airway injury and systemic responses induced by inhalation exposures to pathogens, toxicants, and environmental pollutants. Mechanistic studies are designed to address exposure related changes to respiratory, cardiovascular, immunological, and nervous systems. Dr. Wagner has over 20 years of experience conducting both field- and laboratory-based, animal inhalation exposure studies across the country, and have relied on approaches of digital pathology, cardiovascular telemetry, pulmonary function testing, and genomic analyses in multiple transgenic and strain-sensitive rodents to understand the histopathological, biochemical, and physiologic responses to inhalation exposures. From his 77 research publications, he has been fortunate to collaborate with over 90 different coauthors from 8 units at Michigan State University and over 30 national and international laboratories. Sources of research funding in the past two years have included the National Institutes of Health (NIH), the State of Michigan, and the European Union, although previous funding sources (> 3years ago) have included the Health Effects Institute (HEI), EPA, and the American Chemistry Council (ACC). He recently contributed to the writing and review of EPA's integrated science assessment (ISA) for PM2.5 from 2015-16. Dr. Wagner has provided review and consultation for other national and international agencies, including Health Canada's Human Health Risk Assessment for Gasoline Exhaust, the EPA's ISA for both ozone and for sulfur oxides, the National Research Council's report on Submarine Air Quality, and the Japan Automotive Research Institute's strategic priorities planning. As a member of the TLV-Chemical Substance Committee for the American Conference for Governmental and Industrial Hygienists (ACGIH), he evaluates toxicological and epidemiological data to conduct risk assessment and make exposure recommendations for a variety of airborne workplace chemicals. Dr. Wagner is an active member in the Society of Toxicology where he served leadership positions in Finance, Inhalation and Respiratory Toxicology, and Cardiovascular Toxicology groups. He is a frequent panel member for proposal peer review for NIH (Children's Health Centers, Superfund Program) and CDC (World Trade Center Research Program). Lastly, Dr. Wagner is active on editorial boards of journals with a focus on air pollutant toxicology, including Inhalation Toxicology and Particle and Fibre Toxicology, and he regularly conducts peer review in Toxicological Sciences, Environmental Health Perspectives, Atmospheric Environment, and Science of the Total Environment, among others.

Waldman,Deane

Texas Public Policy Foundation

Dr. Deane Waldman, MD MBA, is a U.S. citizen and currently the Director of the Center for Health Care Policy at the Texas Public Policy Foundation as well as a Director on the Board of the New Mexico Health Insurance Exchange. He is Professor Emeritus of Pediatrics, Pathology, and Decision Science. "Dr. Deane" was educated and trained at Yale (BA, History), Chicago Medical School (MD), Mayo Clinic, Northwestern, Harvard, and Anderson Graduate Schools of Management (MBA). He practiced medicine as a pediatric cardiologist for 37 years, and was the Chief of Cardiology (Pediatric) at University of Chicago. Dr. Deane is an experienced biomedical scientist with more than 120 peer-reviewed medical research citations, over $3 million in research grants received, more than 300 publications in healthcare policy, as well as the author of nine books.Dr. Deane's scientific expertise along with nearly four decades of caring for patients, coupled with his administrative experience and practical business knowledge gives him a unique perspective. Dr. Deane's goal as a member of CASAC would be to assure that EPA standards for Clean Air are based on reliable science and that the Administrator can connect Clean Air standards to the health status of Americans.