

**Invitation for Comment on the Clean Air Scientific Advisory
Committee (CASAC) Ozone Review Panel**

November 14, 2008

The EPA Science Advisory Board (SAB) Staff Office announced in a *Federal Register* Notice on June 6, 2008 (Volume 73, Number 124, Pages 36319-36321) that it was forming a panel for the next review cycle of the Ozone National Ambient Air Quality Standard (NAAQS). This review cycle is expected to take two to three years, beginning in January of 2009. During this period, the Panel will be charged with reviewing EPA's science and policy assessments that form the basis for updating the NAAQS for ozone. These assessments include such documents as an integrated plan for the ozone NAAQS review, an integrated science assessment, a risk and exposure assessment and an advance notice of proposed rulemaking.

To form the panel, the SAB Staff Office sought public nominations of nationally recognized experts in atmospheric sciences, exposure modeling and assessment, dosimetry, toxicology, controlled human exposure, epidemiology, risk assessment, biostatistics and ecological resources. Background information on the project and details on the nomination process appeared in the cited notice (see <http://yosemite.epa.gov/sab/sabproduct.nsf/WebFRNotices/11B2CC5F08A98052852574720071932F?OpenDocument>).

Based on qualifications, interest, and availability of the nominees, the SAB Staff Office identified the attached "Short List" of nominees. Brief biographical sketches of the 39 candidates on the "Short List" are listed below for comment.

The SAB Staff Office Director makes the final decision about who will serve on the panel based on all relevant information. This includes a review of the candidate's confidential financial disclosure form (EPA Form 3110-48) and an evaluation of a lack of impartiality. For the EPA SAB Staff Office, a balanced committee or 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 (primary factors); (b) availability and willingness to serve; (c) absence of financial conflicts of interest; (d) absence of an appearance of a lack of impartiality; and (e) skills working in committees, subcommittees and advisory panels; and, for the panel as a whole, (f) diversity of, and balance among, scientific expertise, viewpoints, etc.

We welcome information, analysis or documentation for the Staff Office to consider in evaluating the "Short List" candidates. Please provide any comments you may have with respect to the "Short List" candidates, no later than December 12, 2008. Please submit your comments to the attention of Dr. Holly Stallworth, Designated Federal Officer at stallworth.holly@epa.gov.

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CASAC Ozone Review Panel Nominees

Avol, Ed

University of Southern California

Ed Avol is a Professor in the Environmental Health Division of the Department of Preventive Medicine at the Keck School of Medicine at the University of Southern California (USC). He received his B.A. (1973) in Mathematics, with a Minor in Chemistry, from the University of California, San Diego (UCSD) and his M.S. (1974) from the California Institute of Technology (Caltech) in Environmental Engineering Sciences. He is a member of the International Society of Exposure Analysis (ISEA), the Air and Waste Management Association (AWMA), and the American Association for Aerosol Research (AAAR). Professor Avol is a member of the Science Advisory Panel of the Mickey Leland National Urban Air Toxics Research Center (NUATRC), a member of both the (Southern California regional air quality agency) South Coast Air Quality Management District's 2007 Air Quality Management Plan (AQMP) Technical Advisory and General Committees, and served as the ISEA Technical Chair for the 2008 Joint ISEA-ISEE Annual Meeting. He is a current member of the USEPA CASAC SOx/NOx and PM Review Panels. He has been awarded two community health advocate awards for his work on the California Children's Health Study and his advisory work on behalf of populations living in the Los Angeles/Long Beach port communities. Professor Avol's research interests include air pollution exposure assessment and both short-term and long-term human respiratory and cardiovascular health outcomes. His research has involved controlled chamber exposures of human volunteers to assess acute reversible air pollution respiratory effects in healthy and asthmatic children, adolescents, and adults, long-term community studies to assess chronic respiratory and cardiovascular effects in children and young adults, and air pollution exposure generation, monitoring, and characterization to quantify and understand ambient pollutant burdens.

Bailar, John

The National Academies

John C. Bailar III, MD, PhD (statistics) is Professor Emeritus at the University of Chicago and founding Chair of the Department of Health Studies there. For many years, his professional interests centered on the causes and prevention of disease. More recently he has focused on improving quality and performance in science generally. He was at the US National Cancer Institute 1956-1980, Harvard University 1980-1988, and McGill University 1988-1995 before he went to Chicago. At present he is Scholar in Residence at the National Academies. He was a MacArthur Fellow 1990-1995. He has published widely in the statistics and epidemiology literature, including, recently, the health effects of air pollution. His areas of expertise include statistics, epidemiology and risk assessment. He has chaired over 20 National Academy committees and served on numerous others. He has also served as monitor of more than 20 Academy reports.

Bailey, Susan M.

Colorado State University

Dr. Susan M. Bailey is an Associate Professor in the Department of Environmental & Radiological Health Sciences at Colorado State University and is also a member of the University of Colorado Cancer Center, the CSU Animal Cancer Center and the Center on Aging. She holds a B.S., M.S. and Ph.D. in Biological Sciences. Her research interests revolve around the interplay between repair of broken DNA ends and the preservation of natural telomeric DNA ends, and how failure of either contributes to carcinogenesis. Dr. Bailey's research expertise includes use of specialized molecular cytogenetic techniques, such as Fluorescence in situ Hybridization (FISH), and Chromosome Orientation (CO-FISH) and combinational multi-fluor FISH (m-FISH and SKY). She uses these tools to explore the involvement of telomere dysfunction and chromosomal rearrangements in the process of generating genomic instability following exposure to ionizing radiation, searching for novel cancer genes and new therapeutic targets.

Balmes, John R.

University of California

Dr. John Balmes is a Professor of Medicine at the University of California, San Francisco (UCSF) where he is the Chief of the Division of Occupational and Environmental Medicine at San Francisco General Hospital (SFGH), Director of the Human Exposure Laboratory of the Lung Biology Center, and the Principal Investigator of the UCSF Pediatric Environmental Health Specialty Unit. He is also Professor of Environmental Health Sciences at the University of California, Berkeley where he is the Director of the Northern California Center for Occupational and Environmental Health and the Center for Excellence in Environmental Public Health Tracking. Dr. Balmes received his BA from the University of Illinois (Urbana) in 1972. He received his MD from the Mount Sinai School of Medicine of the City University of New York in 1976. He completed a Residency in Internal Medicine at the Mount Sinai Hospital at New York City in 1979 and a fellowship in Pulmonary Medicine with additional training in occupational medicine in 1982. He is board-certified in Internal Medicine and Pulmonary Medicine and actively practices pulmonary and critical care medicine at SFGH. Dr. Balmes leads a research program involving the respiratory effects of ambient air pollutants. In his laboratory at UCSF, he conducts controlled human exposure studies of the acute effects of ozone and other pollutants. At UC Berkeley, he collaborates in epidemiological studies of the chronic effects of air pollutants. He has published over 160 papers or chapters on occupational and environmental respiratory disease-related topics with many of these dealing with the potential health effects of ambient air pollutants, especially ozone. Dr. Balmes' expertise in the health effects of ambient air pollutants has been recognized by multiple awards including

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the following: an Environmental/Occupational Medicine Academic Award from the National Institute of Environmental Health Science (1991-1996); the Clean Air Research Award from the American Lung Association of San Francisco and San Mateo in 1997; and the Clean Air Award from the American Lung Association of California in 1999. Dr. Balmes currently serves as a member of the Research Screening Committee of the California Air Resources Board (CARB) and was a member of the Air Quality Advisory Committee of the Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency from 1992-2004. He has served the U.S. Environmental Protection Agency in many capacities. In 1992, he served on the Clean Air Scientific Advisory Committee Oxides of Nitrogen Review Panel and was invited to participate in a Workshop on Health Issues on Air Quality Criteria for Ozone and Related Photochemical Oxidants. He contributed to the writing of the Air Quality Criteria Document for Ozone in 1993-1994. He was a Consultant Reviewer of the Air Quality Criteria Document for Particulate Matter in 1995, was invited to participate in a Workshop on Asthma and the Environment in 1996, and was a Consultant Reviewer of the Air Quality Criteria Document for Ozone in 2003. In addition, he served as a consultant advisor regarding epidemiologic research on the health effects of ozone to the Health Effects Institute from 1990-1992. Dr. Balmes is on the editorial board of the International Journal of Occupational and Environmental Health and is an active reviewer for multiple clinical and environmental health journals, including the New England Journal of Medicine, JAMA, the American Journal of Respiratory and Critical Care Medicine, the European Respiratory Journal, Occupational and Environmental Medicine, and Environmental Health Perspectives. Dr. Balmes is a member of multiple professional societies and organizations, including the American and California Thoracic Societies, the American College of Chest Physicians, the American College of Occupational and Environmental Medicine, the Society for Occupational and Environmental Health, and the International Society for Environmental Epidemiology. He was Chair of the Environmental and Occupational Health Scientific Assembly of the American Thoracic Society in 1997-1999 and President of the California Thoracic Society in 2001-2002.

Bell,Michelle

Yale University

Dr. Michelle Bell is an Associate Professor of Environmental Health at Yale University's School of Forestry and Environmental Health, with joint appointments at the Yale School of Public Health and Environmental Engineering Program. Her work addresses air pollution and human health through research that integrates several disciplines, such as epidemiology, biostatistics, and epidemiology. She is the recipient of the Health Effects Institute Walter A. Rosenblith New Investigator Award and the NIH Outstanding New Environmental Scientist (ONES) Award.

Berhane,Kiros

University of Southern California

Dr. Kiros Berhane is a tenured Associate Professor at the Division of Biostatistics, Department of Preventive Medicine, University of Southern California. He received his PhD degree in Biostatistics from University of Toronto (1994), and completed a postdoctoral fellowship at Johns Hopkins University on environmental research, under the mentorship of Drs. Scott Zeger and Jonathan Samet. His main research interest is on development of statistical methods for environmental research (via National Institute of Environmental Health Sciences funding), and their application to examination of effects of air pollution on children's respiratory and cardiovascular health. Dr. Berhane has served on several science advisory panels and grant review panels for National Institute of Health (NIH), Environmental Protection Agency (EPA), Health Effects Institute (HEI), Canadian Institutes of Health Research (CIHR) and the Institute of Medicine.

Booker,Fitzgerald

USDA-Agricultural Research Service

Dr. Fitzgerald Booker is a Plant Physiologist in the USDA- Agricultural Research Service (ARS) Plant Science Research Unit in Raleigh, NC. Dr. Booker's research contributes to the USDA Climate Change, Soils and Emissions Research National Program (212). The Global Change/Air Quality Project in Dr. Booker's unit currently conducts research on crop plant and agroecosystem responses to variations in tropospheric ozone and atmospheric carbon dioxide concentrations. Dr. Booker has been involved in air quality and global change research for 19 years since obtaining my Ph.D. in Botany from NC State University in 1988. Dr. Booker's research included the effects of UV-B, ozone and elevated atmospheric carbon dioxide on crop physiology and ecology. Early in Dr. Booker's career at the USDA-ARS Air Quality Unit at NC State University, he collaborated in multi-year field experiments that contributed to the now generally accepted viewpoint that the potential risk to crop production from stratospheric ozone depletion is low. Dr. Booker also made contributions to understanding the effects of ozone and elevated carbon dioxide on plant gas exchange, secondary chemistry, growth, yield and decomposition of soybean, cotton, peanut and wheat. Dr. Booker's field studies helped show that amelioration of ozone damage at elevated carbon dioxide concentrations was related to reduced ozone flux and stimulated photoassimilation. In addition, for the first time, gravimetric measurements showed that transpiration on a per plant basis was reduced by both elevated carbon dioxide and ozone. This research provided needed data for parameterizing crop growth models used for simulating crop responses to climate change. Research on decomposition of soybean, cotton and aspen residues showed that the most important effect of elevated carbon dioxide and ozone on residue inputs to soils was on the quantity, rather than the chemistry, of the residues, which has implications for climate change effects on soil carbon sequestration and soil quality. The results of Dr. Booker's research have been primarily used to further understand the effects of air quality and global climate change on plant growth and development, foliar chemistry, decomposition and soil carbon dynamics.

Burkey,Kent

USDA-Agricultural Research Service

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Dr. Kent Burkey received a B.A. degree in Physical Science from Warren Wilson College in 1977 and his Ph.D. in biochemistry from Ohio State University in 1981. Following post-doctoral studies in structural biochemistry, Dr. Burkey joined the USDA Agricultural Research Service in 1983 as a Plant Physiologist to investigate genetic variation and light environment as factors that regulate photosynthesis and chloroplast biochemistry. A shift of priorities in 1995 redirected his research objectives into the area of global change, specifically the impact of elevated ozone and carbon dioxide on plant growth and yield. Current research is focused on the underlying physiological and biochemical mechanisms that determine plant response to ozone and carbon dioxide, and the inherent genetic variation in plant response to these gases commonly observed within and across species. Dr. Burkey is a member of the faculty at North Carolina State University where he is presently an Associate Professor of Crop Science. Dr. Burkey serves on the International Journal of Agronomy editorial board and the Ecological Effects Subcommittee of the Heinz Center's "Ecological Effects of Air Quality" project. He is a member of the American Society of Plant Biologists, the Crop Science Society of America, and Sigma Xi.

Chappelka, Arthur

Auburn University

Dr. Arthur Chappelka is a Professor in the School of Forestry & Wildlife Sciences at Auburn University, Auburn, AL, USA. He received his Ph.D. in plant pathology from Virginia Tech in 1986. Since 1987, Dr. Chappelka has been on the staff within the School investigating the responses of terrestrial ecosystems to air pollutants. Dr. Chappelka has authored or co-authored over 65 peer-reviewed journal articles, edited 1 book, 3 special editions of peer reviewed journals and 12 book chapters. He is a reviewer for several international journals, and has participated on numerous US EPA peer-review panels and a panel member of "National Forum on Environment and Natural Resources R&D" sponsored by the National Academy of Science. His primary interests are in air pollution and global climate effects to terrestrial ecosystems; natural and semi-natural plant community responses (shifts in diversity) to air pollutants and global climate change; plant-stress-air pollution/global climate change interactions; air toxics, and urban forestry.

Chock, David

Ford Motor Company

Dr. David P. Chock received his B.A. degree with highest Honors in Chemistry from the University of California at Santa Barbara, and his Ph.D. degree in Chemical Physics from the University of Chicago. He was a Postdoctoral Fellow at the State University of New York at Buffalo, the Free University of Brussels, and the University of Texas at Austin, conducting research in electron-phonon interactions in semiconductors, dynamics of critical phenomena and hydrodynamic stability, respectively. He joined the General Motors Research Laboratories, and subsequently, Ford Research Laboratory, where he is the Leader of the Environmental Modeling Group in the Physical and Environmental Sciences Department. He has conducted a wide range of research related to the environment and its impact. This includes pollutant dispersion near roadways, improvement of numerical methods in air quality modeling by introducing accurate and fast algorithms to solve the advection equations and the stiff differential equations, extreme-value statistics of serially correlated data, time-series analysis, ozone trend analysis, statistical characteristics of the National Ambient Air Quality Standards, use of the random walk approach to study the impact of grid resolution and subgrid assumptions on air quality model predictions of a convective system containing fast nonhomogeneous atmospheric chemistry, and ozone impact of emissions from vehicles using alternative fuels, assessment of the benefit of an ozone-scavenging system for ambient ozone reduction. He has also conducted epidemiological studies, including the effect of confounding on results of incomplete models, the association of daily mortality and pollutant concentrations in Pittsburgh, and the impact of measurement errors on the detection of a health response threshold. More recently, he has been working on modification of the Comprehensive Air Quality Model (CAMx), application of a global chemistry transport model, and issues related to global climate change. He has published about 90 papers in refereed journals. He has also served on many EPA peer review panels, External Advisory Committees on Community Modeling and Analysis System (CMAS) and on an EPA STAR project.

Foster, Michael

Duke University Medical Center

Dr. W. Michael Foster is a research professor in the Department of Medicine in the Division of Pulmonary and Critical Care Medicine, at the Duke University Medical Center. He serves as a member of the internal advisory committee, and the Director of the Inhalation Toxicology Facility Core of Duke's National Institute of Environmental Health Sciences (NIEHS) Center for Comparative Biology of Vulnerable Populations. Dr. Foster is also a full time member of the Respiratory Biology and Translational Research Study Section at National Institute of Health (NIH) Center for Scientific Review (CSR), Bethesda, MD. Dr. Foster has membership within the American Physiologic Society, and the Society of Toxicology. He serves on several external advisory boards for Federally supported, extramural health effects research, and during 2007 and 2008 he served on the National Academies committee to evaluate morbidity and mortality risk from tropospheric ozone. He is the author or co-author of over 90 journal articles and book chapters that focus on the pulmonary system and/or environmental health. His research interests, and in a sense hallmarks of his scientific career and accomplishments, encompass a paradigm that links cardio-pulmonary injury to air pollutant exposure using established data bases of epidemiological investigations and his own laboratory-based studies on humans and animal models. Dr. Foster's laboratory is supported through extramural funding sources of the NIH and encompasses 3 separable areas of research: environmental triggers of exacerbation for obstructive airway disease, vaccine development, and host (genetic) factors of susceptibility to oxidant lung injury. The end points of this research enhance understanding of health risk from exposure to airborne toxins, and the interdependence between therapy, health risk, and establishment of regulatory standards for air quality that reduce poor health outcomes from exposure.

Fuentes, Montserrat

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North Carolina State University

Dr. Montserrat Fuentes is a full professor of Statistics (with tenure) at North Carolina (NC) State. Dr. Fuentes received her B.S. in Mathematics and Music (piano) from the University of Valladolid (Spain), and her Ph.D. in Statistics from the University of Chicago (1999). She spent 6 months as a postdoc in the National Center of Atmospheric Research (NCAR) before joining NC State in 1999. She is a member-elect of the International Statistical Institute, and also a member of the Regional Advisory Board (RAB) for the Eastern North American Region (ENAR) of the International Biometric Society. Dr. Fuentes is a member of the Science Advisory Board (SAB) Integrated Human Exposure Committee of the U.S. Environmental Protection Agency, and the U.S. representative in the Board of Directors of the International Environmetrics Society. She is a member of the Biostatistical Methods and Research Design (BMRD) study section of the National Institutes for Health. She has also worked for the U.S. Department of Justice as an expert witness (Spring 2007), and she is currently a member of a committee of the National Research Council of the National Academies working on the impact of ozone on mortality. Throughout her professional career, Dr. Fuentes has been active in numerous professional societies, including being chair of the section on Statistics and the Environment (2003) for ENAR, chair of the General Methodology Section (2001, and 2004) of the American Statistical Association (ASA), program chair for the 2002 Southern Regional Council on Statistics (SRCOS) and ASA, serving in the scientific committee for The International Environmetrics Society (TIES) (2004) and in the program committee for the Institute of Mathematical Science-The International Society for Bayesian Analysis (IMS-ISBA) joint conference (2005). She was also chair of the scientific committee for the International Statistical Institute (ISI) Conference on Environmental Statistics and Health (July, 2003). She was the program chair for ENAR 2006. She has been elected for the IMS council (2007-2010). She received the Abdel El-Shaarawi Young Research's Award in recognition of outstanding contributions to environmetric research (2003). Dr. Fuentes has maintained her own research group, with an average of seven Ph.D. graduate students and two postdocs working on projects sponsored by the National Science Foundation (NSF), the US National Institutes of Health (NIH), the US Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA) and the US Department of Defense (DOD). Dr. Fuentes has developed new statistical methods that she applies to air pollution, weather prediction, hurricane forecasting and environmental health risk assessment problems in collaboration with the air quality modelers and scientists at EPA and NCAR. This work has led to numerous publications in top statistical journals and books, as well as top journals in atmospheric sciences. Dr. Fuentes was named an ASA fellow (2008) for outstanding contributions to research in spatial statistics, for excellence in the development and application of statistical methodology in atmospheric sciences, air pollution and oceanography; and for service to the profession.

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 has a Ph.D. degree in toxicology from MIT (1981), and was appointed to the faculty of the Department of Environmental Medicine in 1989. Dr. Gordon currently is the Director of Pulmonary Toxicology; this research core integrates studies primarily in respiratory toxicology, including respiratory immunotoxicology. He has served as an ad hoc member of grant review panels and/or site visit teams for National Institute of Environmental Health Services (NIEHS), National Institute of Allergy and Infectious Diseases (NIAID), NCCR, Department of Defense (DOD), Bureau of Mines, and the U.S. Environmental Protection Agency (EPA). Dr. Gordon currently serves as Chair of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value 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. He has also led a large collaborative effort amongst EPA's five original PM research centers to evaluate the in vitro and in vivo toxicity of size-segregated PM collected in the U.S. and Europe. Dr. Gordon is an active member of the Society of Toxicology (SOT), and has served on the Program Committee (2002-2005), the Placement Service (1998-2001), and as President of its Inhalation Specialty Section during 2002-2003. He has served as a consultant/author to the U.S. EPA on issues of pulmonary toxicology related to the development of various documents, and he currently serves 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.

Graham, Judith

Independent Consultant

Dr. Judith A. Graham is an independent consultant on chemical health risk-related issues (12/07-present). She retired as the Managing Director (1/06-11/07) of the Long-Range Research Initiative (LRI) Team of the American Chemistry Council, where she also served as a Senior Scientist/Senior Director (12/00-12/05). She was responsible for the direction of the LRI, which sponsors an independent research program that advances the science of risk assessment for the health and ecological effects of chemicals to support decision-making by government, industry, and the public. She coordinated with the International Council of Chemical Associations and provided scientific consultation/representation inside and outside the American Chemistry Council. Prior to this, she retired from the U.S. Environmental Protection Agency's Office of Research and Development (ORD) after 32 years of service. During that time, she served as an investigator, a Principal Investigator, Chief of the Branch that conducts animal inhalation toxicology research (7/80-7/85), Deputy Director of the Health Effects Research Laboratory (7/85-7/88), Associate Director of the Environmental Criteria and Assessment Office--Research Triangle Park (7/88-5/95), and Associate Director for Health of the National Exposure Research Laboratory (NERL)(5/95-11/00). She has a Ph.D. in physiology and pharmacology from Duke University (1979). She is a Fellow of the Academy of

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Toxicological Sciences and was elected President. She has been elected President of the International Society for Exposure Analysis (ISEA), President of the Inhalation Specialty Section of the Society of Toxicology (SOT), and President of the Risk Assessment Specialty Section of SOT. She is a member of the Board on Environmental Studies and Toxicology of the National Research Council, where she has served on several committees. She recently served on the Federal Advisory Committee for the National Child Study. Dr. Graham is an author of over 135 journal articles, book chapters, and conference proceedings (primarily on the health effects and health risks of air pollutants) and has made over 90 presentations (over 60 of which were invited) on these topics at national and international meetings. Dr. Graham has consulted extensively inside and outside EPA on the health effects or health risks of chemicals, especially air pollutants. Predominantly, this has involved advising EPA program offices that develop rules and regulations. She has been a senior consultant to the World Health Organization on their development of health-based Air Quality Guidelines for Europe that formed the scientific bases for regulatory activities by the European Commission and member countries. In addition, Dr. Graham has made extensive contributions to health risk assessments for EPA; for example, she was a co-author of 14 health chapters in Criteria Documents for Ozone, Sulfur Oxides, Particulate Matter, and Nitrogen Oxides. These documents formed the scientific bases for the National Ambient Air Quality Standards. She also is expert in health risks of hazardous air pollutants, having published on some, contributed to World Health organization (WHO) Air Quality Guidelines of some, and been very involved in ORD's management of the hazardous air pollutant research program. She was also a member of the EPA team that contributed to the hazardous air pollutant Title of the 1990 Clean Air Act Revisions. Dr. Graham has won numerous awards. Since 1990, they include: Office of Health and Environmental Assessment Peer Award for Managerial Excellence, 1991; ORD Unusually Outstanding Award in recognition of outstanding management and effective leadership within ORD, 1992; EPA Bronze Medals (for leadership on the ORD MMT Team, 1992; for evaluation of tropospheric ozone control, 1994; for contributions to the Fuels and Fuel Additives Health Effects Testing Rule, 1995; for the planning and completion of health research on MTBE, 1995; for outstanding support to EPA in reevaluating the health risks of gasoline containing MMT, 1996; and for outstanding and exceptional scientific contributions in completing the Air Quality Criteria Document for Ozone, 1997); the 1998 Career Achievement Award for outstanding achievement in inhalation toxicology from the Inhalation Specialty Section of SOT; the EPA Distinguished Career Award, 2001; and the Jerome J. Wesolowski award for outstanding contributions to human exposure assessment from the International Society of Exposure Analysis, 2005. In addition to her scientific activities, Dr. Graham has extensive managerial and executive experiences. For example, as Deputy Director of the Health Effects Research Laboratory, she shared with the Director the responsibility for a staff of about 300 and for funding acquisition, allocation, and administration of a budget of over \$40 million per year. As the Associate Director of NERL, she scientifically directed a program of about 180 people and \$35 million per year.

Grantz, David

University of California

Dr. David Grantz has been involved in research and extension efforts on the effects of tropospheric ozone on plants since 1990, and prior to that on plant response to other aspects of the environment. His research expertise is in environmental impacts on carbon acquisition and allocation among plant compartments, the effect of environmental parameters on plant competition, and the relationship between ambient ozone and the spread of glyphosate resistance in weeds. Recent studies have addressed the impact of ozone of competitiveness and reproductive vigor of a C4 weed, the responses of C4 crop systems to ozone, and the potential use of jasmonates as ozone-protective compounds. Dr. Grantz has participated many times in USEPA panels and workshops, and served as a contributing author to the previous Ozone Criteria Document and Particulate Matter Criteria Document. He has also served on advisory boards for the San Joaquin Valley Unified Air Pollution Control District, and as a principal author for California Air Resources Board of their technical assessment of ozone impacts on agro-ecosystems.

Harkema, Jack

Michigan State University

Jack R. Harkema, D.V.M., Ph.D., D.A.C.V.P., received a B.S. (biology/chemistry) from Calvin College, a M.S. (mammalian physiology) and D.V.M. (veterinary medicine) from Michigan State University (MSU), and a Ph.D. (comparative pathology) from the University of California-Davis (UCD). After completing a 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, where he is currently a University Distinguished Professor. Jack is an active member in the Center of Integrative Toxicology and the National Food Safety and Toxicology Center at MSU. Dr. Harkema is the director of the Laboratory for Experimental and Toxicologic Pathology and the MSU Mobile Air Research Laboratory. Dr. Harkema's research is in the areas of inhalation toxicology and respiratory pathobiology. His studies are primarily designed to understand the cellular and molecular mechanisms involved in the pathogenesis of airway injury and remodeling caused by the inhalation of airborne toxicants or other xenobiotic agents (bacteria, viruses, allergens) commonly found in both environmental and occupational settings. Jack has authored or co-authored over 175 peer-reviewed scientific publications and has served on numerous national science advisory committees, including those for the NIEHS, EPA, and the NAS. Besides training graduate students, residents, and postdoctoral fellows in biomedical research, Dr. Harkema also moderates 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.

Jacob, Daniel

Harvard University

Dr. Daniel J. Jacob is the Vasco McCoy Family Professor of Atmospheric Chemistry and Environmental Engineering in the Division of Engineering & Applied Science at Harvard

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University. He has a B.S. (1981) in Chemical Engineering from the Ecole Supérieure de Physique et Chimie de Paris, and a Ph.D. (1985) in Environmental Engineering from Caltech. He came to Harvard as a postdoc in 1985 and joined the faculty in 1987. His research interests span a range of atmospheric chemistry issues from regional air pollution to climate change and include work with global models of atmospheric composition and climate, aircraft missions, and satellite observations. Dr. Jacob has served as Mission Scientist on six National Aeronautics and Space Administration (NASA) aircraft campaigns in the past decade and serves as Model Scientist for the GEOS-Chem global 3-D chemical transport model. He currently chairs the NASA Earth Science Subcommittee. Among his professional honors are the NASA Distinguished Public Service Medal (2003), the AGU Macelwane Medal (1994) and a Packard Fellowship (1989). Prof. Jacob has published over 250 papers in professional journals and has trained over 60 Ph.D. students and postdocs over the course of his career. He is the 6th most-cited author in geosciences (1991-2001) according to the ISI Science Citation Index.

Kleeberger, Steven

National Institutes of Health

Dr. Steven Kleeberger received his A.B. degree in zoology from Miami University and a Ph.D. in ecology from Kent State University in 1982. He did his postdoctoral research at Johns Hopkins University and became a full Professor at Hopkins in 2000. He was recruited to NIEHS as Chief of the Laboratory of Respiratory Biology in 2001. He also directs the Environmental Genetics research group and the Director's Challenge program in Mechanisms of Susceptibility to Oxidant-stress Induced Disease at National Institute of Environmental Health Services (NIEHS). The overall goal of his research has been to utilize positional cloning approaches in inbred mice to identify candidate genes that determine susceptibility to environmental lung disease. His lab has developed a number of models of genetic predisposition to inhaled agents including acid-coated particles nitrogen dioxide, ozone, and hyperoxia. The work has led to the identification of significant susceptibility quantitative trait loci (QTLs), and functional characterization of candidate genes for susceptibility to lung injury induced by environmental pollutants. His laboratory is also focused on gene-environment interaction and the pathogenesis of disease in human populations. His lab is participating in genetic analysis of acute respiratory distress syndrome (ARDS), asthma pathogenesis, and susceptibility to coal workers pneumoconiosis. His lab is also directing investigation of the role of innate immunity and antioxidant genes in determination of susceptibility to respiratory syncytial virus (RSV) infection and chronic lung disease in infants. Dr. Kleeberger has served as a consultant to the World Health Organization (WHO) and US Environmental Protection Agency (US EPA) regarding susceptible sub-populations and airborne pollutants. He has authored over 120 peer-reviewed manuscripts and two dozen book chapters. He is a reviewer for over 20 journals, and he has held a number of editorial positions. He has given over 90 lectures nationally and internationally. He has also served or currently serves on multiple study sections and international advisory committees on genetic susceptibility.

Kleinman, Michael T.

University of California, Irvine

Dr. Michael T. Kleinman is a Professor of Occupational and Environmental Medicine in the Department of Medicine at the University of California, Irvine (UCI), where he has been since 1982. 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 for 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 also the Co-Director of the Air Pollution Health Effects Laboratory in the Department of Medicine at University of California, Irvine and a member of the UCI Radiation Safety Committee. He has published more than 100 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 and manufacture. 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 and laboratory-generated aerosols containing chemically or biologically reactive metals such as lead, cadmium, iron and manganese. He recently 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 studies use radioactive and fluorescent tracers to measure kinetics of uptake, distribution, and retention of inhaled contaminants. His recent health effects studies have demonstrated that inhalation of combustion-generated particles can promote airway allergies and accelerate the development of cardiovascular disease and that these effects may be associated with organic and elemental carbon components of the ultrafine fraction of the ambient aerosol. His studies have also demonstrated that inhalation of ambient particles is associated with persistent inflammation in the brain and that particles associated with manganese can alter dopamine and serotonin levels in the brain and can cause changes in nerve structure during brain development. 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.

Knobeloch, Lynda

Wisconsin Department of Health & Family Services

Dr. Lynda Knobeloch is a senior research scientist with the Wisconsin Department of Health Services' Bureau of Environmental and Occupational Health. In addition, she is an adjunct professor at the Center for Molecular and Environmental Toxicology at the University of Wisconsin-Madison. She works closely with the Wisconsin Department of Natural Resources' air management and drinking water quality programs and has developed health-based groundwater protection standards for more than 50 chemicals. Her research interests are in the fields of human exposure assessment; the human health effects of low level, chronic exposure to environmental contaminants; and public health surveillance. She recently completed

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two large, population-based studies. Between 2000 and 2002, she managed a large, population-based health study in a community impacted by arsenic-contaminated groundwater. In June of 2005, she completed a study that assessed fish consumption and methylmercury exposure among more than 2,000 Wisconsin residents. She has authored numerous articles on environmental causes of human disease. Dr. Knobeloch was a member of the National Research Council Committee on the Toxicological Effects of Methylmercury. She is a current member of the EPA Science Advisory Board Homeland Security Advisory Committee (HSAC).

Koutrakis, Petros

Harvard University

Dr. Petros Koutrakis is Professor of Environmental Sciences and Director of the Exposure, Epidemiology and Risk Program at Harvard University. He received his M.S. (1982) and Ph.D. (1984) in environmental chemistry from the University of Paris. His research interests include human exposure assessment, ambient and indoor air pollution, environmental analytical chemistry, and environmental management. He has served as: the Technical Editor-In-Chief of the Journal of the Air and Waste Management Association (AWMA); a consultant to the EPA Science Advisory Board, including service on the previous Clean Air Scientific Advisory Committee (CASAC) Particulate Matter (PM) Review Panel and chair of the EPA Review Panel for Research Proposals on Ambient Particle Modeling; a member of the National Research Council (NRC) PM committee; and an advisor to the International Monitoring of Protected Visual Environments (IMPROVE), Pan American Health Organization (PAHO), World Health Organization (WHO), and the United Nations Environment Program (UNEP). Dr. Koutrakis is the Principal Investigator (PI) of the EPA/Harvard Center on particle health effects; Co-PI on a NIEHS Program projects (Cardiac effects of air pollution). In addition, he is the PI of exposure assessment and air quality studies funded by Environmental Protection Agency (EPA), Health Effects Institute (HEI), Electric Power Research Institute (EPRI), American Petroleum Institute (API), and Department of Energy (DOE).

MacIntosh, Helen Suh

Harvard University

Dr. Helen Suh MacIntosh is an Associate Professor of Exposure Assessment and Environmental Chemistry at the Harvard School of Public Health. Dr. MacIntosh is an expert in air pollution exposure assessment, measurements, and environmental epidemiology. She is the Co-Principal Investigator of the Harvard-EPA Particle Health Effects Center study of the Normative Aging Study cohort and is the Principal Investigator of the Exposure Core of our NIEHS-funded Program Project on Particle Exposures and Cardiovascular Health Effects. Dr. MacIntosh has also been the Principal Investigator of numerous exposure and health studies, including those to characterize multi-pollutant exposures, to examine cardiovascular health effects from air pollution, and to develop GIS-based spatial smoothing models to estimate chronic particulate exposures. She is a member of the EPA Clean Air Scientific Advisory Committee Panel for Particulate Matter Review and was previously a member of the National Academy of Science Committee on Estimating Mortality Risk Reduction Benefits From Decreasing Tropospheric Ozone Exposure. Dr. MacIntosh has performed advisory work in environmental sciences for numerous international, national, and local organizations. She is a member of the Harvard-Cyprus International Institute and the Cyprus International Institute, which are sponsored by Harvard University and the Cyprus government to foster research and teaching in the surrounding region, including the Middle East, Africa, and Europe. Dr. MacIntosh is also a scientific advisor to the Korean Advanced Institute of Science and Technology in Daejeon, Korea. Dr. MacIntosh 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.

Miller, Frederick J.

Independent Consultant

Fred J. Miller, Ph.D. is currently an independent consultant in dosimetry and inhalation toxicology. From February, 1991 until April, 2005 he was employed in various capacities at the CIIT Centers for Health Research (CIIT) and its predecessor organization, the Chemical Industry Institute of Toxicology, serving most recently as Vice President for Research. Dr. Miller received a B.A. and M.S. in Statistics from the University of Wyoming. In 1968, he began a career as a commissioned officer in the U.S. Public Health Service (PHS). As a mathematical statistician involved with the design and analysis of studies on the effects of air pollutants on animals, Dr. Miller became interested in the use of such studies for assessing human health risks. He was assigned to the U.S. Environmental Protection Agency (EPA) when it was created in 1970. In 1971, he received an EPA long-term training award, which led to his doctoral research on the transport and removal of ozone in the lungs of animals and man. He received a Ph.D. in Statistics from North Carolina State University in 1977. Dr. Miller is interested in developing and implementing research strategies and projects that permit increased utilization of animal toxicological results to evaluate the likelihood of human risk from exposure to inhaled chemicals. His primary research interests include pulmonary toxicology, respiratory tract dosimetry of gases and particles, lung physiology and anatomy, extrapolation modeling, and risk assessment. He is internationally recognized for his research on the dosimetry of reactive gases. Dr. Miller is active in professional societies and consulting on environmental health issues. The author or co-author of more than 160 publications, Dr. Miller received a number of Scientific and Technical Achievement awards from EPA and is the recipient of the PHS' Outstanding Service Medal. He has served both as a regular and as an ad hoc member of EPA's Clean Air Science Advisory Committee.

Neufeld, Howard

Appalachian State University

Dr. Howard Neufeld is currently a full Professor in the Department of Biology at Appalachian State University (ASU), Boone, NC. He received a B.S. in Forestry from Rutgers University in 1975, a M.F. in Forest Sciences from the Yale School of Forestry and Environmental Science in 1977, and a Ph.D. in Botany from the University of Georgia in 1984. In 1985 Dr.

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Neufeld began an National Research Council (NRC) post-doctoral appointment under Drs. Dave Tingey and Bill Hogsett at the EPA Lab in Corvallis, OR, where he worked on the effects of ozone on root growth of tree seedlings. He is currently the Past-President of both The Association of Southeastern Biologists (ASB) and the Southern Appalachian Botanical Society. Dr. Neufeld's research expertise is in the area of plant physiological ecology, and has included work on desert plants and understory tree adaptations to shade. For the past 18 years, he has been active in air pollution effects research. Dr. Neufeld was the principal investigator of a National Park-U.S. EPA sponsored research project on the effects of ozone on plants native to Great Smoky Mountains National Park. Since 1992, his research group has investigated the impacts of ozone on native wildflowers in the Park. He is the recipient of several awards at ASU for his research, including the Wachovia Award for Achievement in Environmental Research, the Faculty Research Award from the Association of Southeastern Biologists, the local Sigma Xi Chapter Outstanding Researcher Award, and this fall, the 100 Scholars Award for Research from the ASU Office of Research and Graduate Education.

Poirot, Richard L.

Vermont Agency of Natural Resources

Mr. Richard L. Poirot has worked as an environmental analyst in the Air Quality Planning section of the Vermont Department of Environmental Conservation since 1978. His responsibilities include developing the technical support for State Implementation Plans (SIPs) to ensure attainment and maintenance of Federal and State standards for ozone, particulate matter, and regional haze. Mr. Poirot has also developed interests in drawing inference on the nature of pollution sources from analysis of ambient measurement data, and in working in collaborative regional scientific or science/policy forums. For example, he is or has been a participant on Ambient Monitoring and Assessment Committee for the Northeast States for Coordinated Air Use Management, the Data Analysis workgroup for the Ozone Transport Assessment Group, the Science and Technical Support Workgroup for the Federal Advisory Committee Act (FACA) Subcommittee on Ozone, Particulate Matter and Regional Haze, the Monitoring and Data Analysis Workgroup for the Mid Atlantic/Northeast Visibility Union (MANE-VU), the EPA Clean Air Scientific Advisory Committee, the Steering Committee for the Interagency Monitoring of Protected Visual Environments, and the US/Canada (Air Quality Agreement) Subcommittee on Scientific Cooperation. Mr. Poirot holds a B.A. degree from Dartmouth College, where he majored in geography and environmental studies.

Postlethwait, Edward

University of Alabama at Birmingham

Dr. Edward M. Postlethwait is a professor and chairman of the Department of Environmental Health Sciences, School of Public Health, University of Alabama at Birmingham (UAB). He is also Co-Director of the UAB Center for Free Radical Biology and Director of the UAB Environmental Exposure Facility. Dr. Postlethwait received his BS from the University of North Carolina at Chapel Hill (1971) and his MS (1980) and Ph.D. (1983) from the University of California at Los Angeles. Dr. Postlethwait serves as the Program Director of an National Institute of Health (NIH)/ National Institute of Environmental Health Sciences (NIEHS) funded interdisciplinary program project, which links eight institutions and over twenty-five investigators, focused on delineating the mechanisms of environmental oxidant-mediated effects on respiratory tract growth and development. This research spans investigations of ozone chemistry, respiratory tract surface biochemistry, morphology and morphometrics, NMR-based imaging and 3-dimensional reconstructions of the entire respiratory tract, and chemical engineering based development of dosimetry and health outcomes extrapolation models. His research also focuses on basic mechanisms of lung surface interactions that mediate acute lung injury. Dr. Postlethwait's expertise is in lung toxicology, free radical biochemistry, environmental oxidant induced acute cell injury, lung biology, dosimetry, and imaging. Dr. Postlethwait is currently a member of the NIH Lung Injury, Repair, and Remodeling Study Section and formerly chaired the Alcohol and Toxicology 4 Study Section for a three year period. He has recently served on numerous other NIH study sections, has been an invited expert to develop assessment criteria for the NIEHS funded asthma portfolio and to evaluate lung injury markers for the National Toxicology Program. Dr. Postlethwait serves as an external scientific advisor for two NIH program projects and an EPA Center.

Ryan, P Barry

Emory University

Dr. P. Barry Ryan is Professor of Exposure Science and Environmental Chemistry in the Department of Environmental and Occupational Health, Rollins School of Public Health, Emory University. He is jointly appointed in the Department of Chemistry at Emory University. Prior to joining the faculty at Emory in 1995, he was on the faculty at Harvard School of Public Health. He received a BS in Chemistry from the University of Massachusetts, an MS in Physical Chemistry from the University of Chicago, and doctorate in Computational Chemistry from Wesleyan University. He has been active in the exposure assessment field for over 25 years publishing in excess of 90 peer-reviewed manuscripts and book chapters and making over 170 presentations of his work to the scientific community. His work has included both cross-sectional and longitudinal studies of community-based exposure for multiple pollutants in multiple media. Dr. Ryan is currently Principal Investigator on an U.S. EPA-funded STAR Grant designed to assess the effectiveness of biological markers of exposure to organophosphate and pyrethroid pesticides. In addition, he is Principal Investigator studying the impact on the surrounding community of airport emissions of various airborne compounds, and of a retrospective study of exposure to perfluorooctanoic acid in a large area surrounding a manufacturing facility using this compound. Dr. Ryan is a member of the Executive Committee of the Emory/Battelle/ Morehouse consortium for the National Children's Study. In the recent past, he was Principal Investigator on the U.S. EPA funded longitudinal study of exposures to pollutants known as the National Human Exposure Assessment (NHexas) - Maryland study, and was Co-Principal Investigator of a study on health compromised individuals assessing the impact of particulate matter exposure on heart rate variability, and Co-Principal Investigator on a study of the impact of air pollution exposure on hiker lung-health in the Great Smoky Mountain National Park. Dr. Ryan is a member of the Board of Scientific Counselors for U.S. EPA's Office of Research and Development. Dr. Ryan also completed a four-year term on the Federal Advisory Committee for the National Children's Study being undertaken by the National Institutes of Health. He has served on numerous advisory panels for the U.S. EPA, most recently as an ad hoc member of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Science Advisory Panel (SAP) on

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CCA-Treated Wood Products and the FIFRA SAP on Carbamate Pesticides. Dr. Ryan has also served on several National Academy of Science panels, most recently on the panel producing the monograph *Managing Air Quality in the United States*. Dr. Ryan is a trained chemist and maintains a large laboratory facility. His website is <http://www.sph.emory.edu/eoh/faculty/ryan.html>

Schwartz, Joel

Harvard University

Dr. Joel Schwartz is a Professor in the Departments of Epidemiology and Environmental Health at the Harvard School of Public Health, and in the Department of Medicine at Harvard Medical School. He is also a faculty member in the Environmental Biostatistics Program at the School of Public Health. Dr. Schwartz received his B.A. (1969) and Ph.D. (1980) from Brandeis University. He is a member of the International Society for Environmental Epidemiology, and the American Thoracic Society. Dr. Schwartz served as a member of the Center for Disease Control's Committee on Preventing Childhood Lead Poisoning from 1994 to 2002, and as a member of two National Research Council Committees (Committee on Assessing Lead Exposure in Critical Populations, Committee on Environmental Epidemiology). Dr. Schwartz was a recipient of a John D. and Catherine T. MacArthur Fellowship, and a World Congress Award from the International Union of Environmental Protection Associations. His expertise is in epidemiology, biostatistics, and cost benefit analysis. Dr. Schwartz's major subject matters include air pollution and lead. His research has involved cross-sectional, time-series, cohort and panel studies of the acute and chronic health effects of air pollution, including both respiratory and cardiovascular endpoints, and he has a particular interest in questions of susceptibility.

Sheppard, Elizabeth A. (Lianne)

University of Washington

Dr. Elizabeth A. (Lianne) Sheppard is a Research Professor in the Department of Biostatistics, and the Department of Occupational and Environmental Health Sciences. She holds a Ph.D. (1992) in Biostatistics from the University of Washington. Her scientific interests include estimating the health effects of occupational and environmental exposures, air pollution health effects, observational study design, and group information in observational studies. She collaborates on several occupational and environmental health studies, including the MESA Air study. Her statistical methods research addresses the role of exposure and study design in estimating health effects from observational studies.

Smith, Gretchen

University of Massachusetts

Dr. Gretchen C. Smith is a researcher at the University of Massachusetts in the Department of Natural Resources Conservation. Dr. Smith's research is funded by the U.S. Forest Service, Forest Inventory and Analysis (FIA) and Forest Health Monitoring (FHM) programs. Dr. Smith's association with FIA/FHM goes back to 1990 although her role, first as State Coordinator and more recently as National Advisor for ozone biomonitoring, has evolved over the years. Dr. Smith's educational background is in Forestry (B.S. University of Massachusetts) and Plant Pathology (Ph.D. Rutgers University) with a focus on trees, ozone, and forest health. At Rutgers she studied heavy metal effects on trees and agricultural crops, evaluated urban tree plots for ozone injury, and investigated ozone effects on soybean physiology and growth. Dr. Smith began her professional career in Massachusetts as Principal Investigator for the Massachusetts Acid Rain Research Program. She linked this state-level program to emerging forest health surveys sponsored by the U.S. Forest Service and became Lead Investigator for the state-level field programs associated with the Cooperative Study of Red Spruce and Balsam Fir Decline in the Northeast, and the North American Sugar Maple Decline Project. This led to her position as State Coordinator for the New England Forest Health Monitoring Project. Dr. Smith was initially responsible for implementing FHM in the three southern New England states, and served on the Technical Committee for the region-wide program. As FHM grew from a regional to a national program, she moved into a national position as National Ozone Advisor and was largely responsible for the development of what is now known as the FIA National Ozone Biomonitoring Program. Dr. Smith's current research interests include ozone risk assessment and evaluating the relationships among indices of ozone injury and various ozone exposure metrics.

Ultman, James

Pennsylvania State University

Dr. James Ultman is a Distinguished Professor, Department of Chemical Engineering and Department of Bioengineering, and Chair, of the Intercollege Graduate Degree Program in Physiology, at the Pennsylvania State University. Dr. Ultman earned his B.S. in Chemical Engineering (1965) from the Illinois Institute of Technology; and earned his M.S. (1967) and Ph.D. (1969) in Chemical Engineering, from the University of Delaware. He was an National Institute of Health (NIH) Postdoctoral at the University of Minnesota from 1969-70. Dr. Ultman's areas of expertise are: chemical engineering, biomedical engineering, respiratory physiology, the measurement and simulation of the respiratory dosimetry of ozone, and the quantification of ozone reaction with respiratory antioxidants. Dr. Ultman currently serves as an expert panelist on EPA's Clean Air Scientific Advisory Committee (CASAC) Ozone Review Panel. His most-recent prior service on advisory committees includes: (1) Scientific Advisory Committee, CIIT Centers for Health Research, Research Triangle Park, NC. (2001-2003); (2) National Institute of Environmental Health Sciences (NIEHS) Superfund Hazardous Substances Basic Research Program: Study Section Member (1999); (3) EPA Scientific Review Panel: Air Quality Criterion for Ozone (1993); (4) EPA Scientific Review Panel: Research Needs for Ozone (1996); (5) EPA and Basic Acrylic Monomer Manufacturers Workshop: Nasal Dosimetry-Issues and Approaches (1998); (6) EPA and Health Canada Review Panel: Formaldehyde-Assessment for Carcinogenicity (1998); and (7) NIH Program Project Grant (PPG) Scientific Advisor: Mechanism of Heterogeneity in the Lungs, University of Washington (1998-present).

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Valberg, Peter

Gradient Corporation

Dr. Peter Valberg is Principal and Senior Health Scientist at Gradient Corporation, Cambridge, MA, where he prepares public health analyses in the areas of inhalation toxicology and human health risk assessment. He is a full member of the American Association for Aerosol Research, the Society of Toxicology, the Health Physics Society, and the International Society for Environmental Epidemiology, and an associate member of the American Conference of Governmental Industrial Hygienists. Dr. Valberg is a Fellow of the Academy of Toxicological Sciences and holds M.S., M.A., and Ph.D. degrees from Harvard University. His postdoctoral training included alveolar macrophage function (NHLBI), pulmonary pathology (University of Vermont), Analytical Light Microscopy (Woods Hole Marine Biological Laboratory), and Advanced Risk Assessment (University of Cincinnati). His expertise and interests are in the areas of respiratory physiology, inhalation toxicology, inhalation bioassays in laboratory animals, and quantitative cancer risk assessment. Dr. Valberg was a member of the National Academy of Sciences "Committee on Estimating the Health-Risk-Reduction Benefits of Proposed Air Pollution Regulations," which led to the National Academy of Science (NAS)/ National Research Council (NRC) report: "Estimating the Public Health Benefits of Proposed Air Pollution Regulations." Dr. Valberg's scientific research and consulting work (including the last two years) has been supported by both non-profit and for-profit entities, and some of this work has focused on the toxicology of ozone. Gradient Corporation is an environmental consulting company that prepares health-risk, exposure-assessment, and regulatory-impact analyses to both regulated industries and regulating agencies.

Vedal, Sverre

University of Washington

Dr. Sverre Vedal is currently a Professor in the Department of Environmental and Occupational Health Sciences, Division of Occupational and Environmental Medicine, at the University of Washington School of Public Health and Community Medicine. Dr. Vedal is a pulmonary physician and an epidemiologist. He received his Doctor of Medicine degree from the University of Colorado and his Master of Science (M.Sc.) degree in epidemiology from the Harvard University School of Public Health. He worked for 18 years as an academic pulmonologist at the University of British Columbia in Vancouver, and then 3 years at the National Jewish Medical and Research Center in Denver, Colorado before joining the faculty at the University of Washington in 2004. Dr. Vedal was a member of the EPA Science Advisory Board's Clean Air Scientific Advisory Committee (CASAC) until 2003 and then served on the CASAC Particulate Matter Review Panel until 2006. He now serves on the CASAC Ozone Review Panel. Dr. Vedal serves as a standing member of the Review Committee of the Health Effects Institute (HEI) and chaired the review committee for the HEI-funded National Morbidity, Mortality, and Air Pollution Study (NMMAPS) and the HEI committee that reviewed the revised time series analyses of EPA selected studies. He served as a member of the Air Quality Management in the U.S. Committee of the National Research Council and now serves on the Institute of Medicine Committee on Evaluation of the Veterans Administration's Presumptive Disability Decision-Making Process. Dr. Vedal's research interests are in the health effects of air pollution and in occupational lung disease. He is currently working on incorporating source-oriented approaches to specifying exposure to ambient air pollution in epidemiological studies, and on identifying effects of long-term exposure to components and sources of particulate matter on cardiovascular disease.

Wallington, Timothy

Ford Motor Company

Dr. Timothy J. Wallington was born and educated in England. He received B.A. (1981), M.A. (1982), Ph.D (1983), and D.Sc. (2007) degrees from Corpus Christi College, Oxford University where he studied with Professor R.P. Wayne and Dr. R.A. Cox. He has carried out extensive research on various aspects of atmospheric chemistry and the kinetics and mechanisms of many different transient atmospheric species. His postgraduate research studies were made at the University of California, Los Angeles (1984-1986) with Professor J.N. Pitts and Dr. R.A. Atkinson. He was Guest Scientist at the U.S. National Bureau of Standards (1986-1987) with Dr. M.J. Kurylo. He joined the Research staff at the Ford Motor Company in 1987 where he is currently a Technical Leader in the System Analytics and Environmental Sciences Department. Dr. Wallington has studied the atmospheric chemistry of vehicle and manufacturing emissions and their contribution to local, regional, and global air pollution and global climate change. He has helped develop policy and strategy to address global environmental issues associated with transportation. He is co-author of over 360 peer reviewed scientific publications dealing with various aspects of air pollution chemistry. He is the recipient of eleven Ford Research Publication Awards (1991-2006), the Ford Motor Company Technical Achievement Award (1995), the Henry Ford Technology Award (1996), and the Humboldt Research Fellowship, Universität Wuppertal (1998-1999) with Professor K.H. Becker. Dr. Wallington received the 2008 Industrial Chemistry Award from the American Chemical Society. He is a co-author of three books on the mechanisms of atmospheric oxidation of the alkanes, alkenes, and the aromatic hydrocarbons published by Oxford University Press. His area of expertise is in the chemical properties of ozone and other photochemical oxidants and their precursor substances. He has studied the atmospheric processes involved in the formation, transport, and degradation of ozone and other photochemical oxidants in the atmosphere, including interactions with global climate and stratospheric ozone.

Weschler, Charles J.

University of Medicine and Dentistry of New Jersey

Dr. Charles J. Weschler is currently a member of the Environmental and Occupational Health Sciences Institute (EOHSI), UMDNJ/Robert Wood Johnson Medical School & Rutgers University; an Adjunct Professor, Department of Environmental and Occupational Medicine, UMDNJ/Robert Wood Johnson Medical School; and a Visiting Professor (ongoing), International Centre for Indoor Environment and Energy, Technical University of Denmark. Dr. Weschler received the B.S. in Chemistry from Boston College in 1969, the M.S. and Ph.D. degrees in Chemistry from the University of Chicago in 1971 and 1974 and was a Postdoctoral Fellow with Prof. F. Basolo at Northwestern University. He joined Bell Laboratories in

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1975 and worked as a research scientist in the former Bell System Laboratories (Bell Labs/Bellcore/Telcordia Technologies) before joining the faculties of UMDNJ/Rutgers and the Technical University of Denmark in 2001. He was named a "Distinguished Member of Technical Staff" at Bellcore in 1986, was a Visiting Scientist in the Indoor Environment Program at Lawrence Berkeley National Laboratory in 1991, and was elected to the International Academy of Indoor Air Sciences in 1999. Since 2003 he has been a Guest Professor at the University of Innsbruck (Austria), the University of Kuopio (Finland), the University of Texas – Austin and the University of Umea (Sweden). His research has focused on the chemicals present in indoor environments, reactions among these chemicals, highly reactive and short-lived indoor species, the formation and fate of secondary organic aerosols in indoor environments, indoor/outdoor relationships for vapor and condensed phase species, factors influencing the concentrations, transport and surface accumulations of indoor pollutants, and indoor contributions to total pollutant exposures. He is a member of numerous professional societies and was Treasurer and on the Board of Directors for the International Society of Indoor Air Quality and Climate (ISIAQ). He has served on 4 committees for the National Academy of Sciences, as a member of the US EPA Science Advisory Board, and as a member of the NORA Indoor Environment Team for the National Institute of Occupational Safety and Health. He was Associate Editor/Chemistry for the journal *Indoor Air*, and is currently on the Editorial Advisory Board for both *Atmospheric Environment* and *Indoor Air*. He was a co-guest editor for two special issues of *Atmospheric Environment* on Indoor Air Chemistry and Physics (2003 & 2007). Dr. Weschler has published 94 peer-reviewed journal articles, as well as numerous articles in conference proceedings and chapters in books. Since 2004 he has been a Co-PI for the Center of Excellence for Airliner Cabin Environment Research (ACER), sponsored by U.S. Federal Aviation Administration (FAA). Sources of recent grant and contract support are the International Centre for Indoor Environment and Energy at the Technical University of Denmark for sensory studies of indoor pollutants, the California Air Resources Board for a project on cleaning products and air fresheners, the Department of Defense for a project on products produced during chemical disinfection of buildings, and the FAA and Boeing for studies of ozone-initiated chemistry in simulated and actual aircraft cabins.

West, Jason

University of North Carolina

Dr. Jason West is interested broadly in the problems of air pollution and climate change, with the goal of exploring the relationships between these problems and the relevance of these relationships for environmental science and policy. Using computer models of atmospheric chemistry, Dr. West is interested in exploring the effects of changes in emissions on global air quality, the international transport of air pollutants (focusing on ozone and particulate matter), and the radiative forcing of climate. Recently, Dr. West's research has emphasized reducing methane emissions as beneficial for climate change, ozone air quality, and human health. In the future, he plans to explore how goals of improving air quality and slowing greenhouse warming can be achieved simultaneously. Current projects: 1) Modeling the inter-continental transport of ozone air pollution and its effects on human mortality. 2) CO as Kyoto's forgotten gas: The influences of regional CO emissions on climate forcing and the long-range transport of air pollution. 3) The global burden of anthropogenic ozone and particulate matter air pollution on premature human mortality. 4) Simultaneous planning for emission reductions for greenhouse gases and air pollution.

Woodbury, Peter

Cornell University

Dr. Peter Woodbury serves as Coordinator of the Bioenergy and Greenhouse Gas Initiative of the Department of Crop and Soil Sciences. He is also the Northeast Sun Grant Region Technical Lead for the Department of Energy (DOE)/ Oak Ridge National Laboratory (ORNL) Feedstock Partnership Geographic Information System (GIS) Atlas Project. He designs and manages research projects, writes grant proposals, creates and oversees project budgets, and manages sub-contracts. Dr. Woodbury works with a multi-disciplinary multi-institutional team to: assess potential bioenergy feedstock production and sustainability in the Northeastern and North-Central US, assess potential mitigation options for greenhouse gas emissions from the agriculture and forestry sectors, model effects of tillage and residue management on soil carbon in the rice-wheat cropping system of the Indo-Gangetic Plains, model nitrogen, phosphorus and sediment loading to surface waters in the Upper Susquehanna watershed. Dr. Woodbury evaluates probabilistic methodologies for assessing risks from fire and invasive species to wildland ecosystems throughout the Western US, writes peer-reviewed publications, presents results at international meetings, and was the Federal Ozone Criteria Document Author 2002 and 2005 (part-time). Dr. Woodbury quantifies the response of forest and agricultural ecosystems to ambient ozone based on a comprehensive literature review and expert subject matter knowledge, writes detailed report as part of the U.S. Environmental Protection Agency (USEPA) technical support document for the National Ambient Air Quality Standard for Ozone as required under the Clean Air Act, and provides expert testimony to the USEPA Clean Air Scientific Advisory Committee Ozone Review Panel. Dr. Woodbury participates in: a panel discussion on Ozone-Related Welfare Effects Evidence – Vegetation Effects. Woodbury PB (Panel Session Co-chair), a workshop to discuss Policy-Relevant Science to Inform EPA's Integrated Plan for the Review of the Ozone National Ambient Air Quality Standards on October 29-30, 2008. U.S. EPA. Research Triangle Park, NC, and a panel discussion on Welfare Exposure/Risk Assessment Issues Woodbury PB (Panel Member) and a workshop to discuss policy-relevant science to inform EPA's Integrated Plan for the Review of the Ozone National Ambient Air Quality Standards on October 29-30, 2008 at U.S. EPA. Research Triangle Park, NC.