The National Academies of
SCIENCES · ENGINEERING · MEDICINE

Planning Meeting for Environmental Health Work

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500 Fifth Street, NW, Washington, DC 20001

TAB A: Agenda

The National Academies of
SCIENCES · ENGINEERING · MEDICINE

Environmental Health Work at the National Academies of Sciences, Engineering, and Medicine Planning Meeting

February 10, 2016
National Academies of Sciences Keck Center
500 5th Street, NW
Washington, DC 20001
Room 208

Meeting Objectives:
Describe how the National Academies of Sciences, Engineering and Medicine can provide more significant leadership to the environmental health community by providing convening power and scientific advice in the variety of disciplines and sectors that can and should contribute to solving complex environmental health challenges. Specifically:

- Identify environmental health community's leadership needs from the National Academies.
- Elaborate on environmental health community's needs for National Academies work across disciplines, sectors and policy spheres.
- Identify potential options available for the National Academies to meet the articulated needs.
- Prioritize options and consider options for moving forward.

8:45 **Breakfast-** Continental Breakfast will be served in the meeting room.

9:00 **Introductions**
Alan Leshner, American Association for the Advancement of Science (CEO Emeritus)

9:10 **Welcome and Today's Objectives**
Bruce Darling (remote), Executive Officer, National Academies of Sciences, Engineering and Medicine
(allotted time includes 10-15 minutes for discussion)

9:35 **Review of Meeting Agenda and Approach to Meeting Objectives**
Alan Leshner
(allotted time includes 7-10 minutes for discussion)

9:50 **Complex Environmental Health Challenges on the Horizon**
Thomas Burke, Associate Dean for Public Health Practice and Training at Johns Hopkins Bloomberg School of Public Health
(allotted time includes 15 mins discussion)

10:35 Break

10:50 **How We Operate Now in Environmental Health**
Greg Symmes, Executive Director, Division on Earth and Life Studies (DELS)
Clyde Behney, Executive Director, Health and Medicine Division (HMD)
(allotted time includes 10 mins for discussion)

11:15 **What Does the Environmental Health Community Need?**
Group discussion facilitated by Alan Leshner

12:15 Lunch

1:15 **Illustrative Example of Cross-National Academies Work**
Amanda Staudt, Board Director, Board on Atmospheric Sciences and Climate and the Polar Research Board, DELS
(allotted time includes 10 mins for Q&A)

1:50 **What National Academies Mechanisms Would Address Unmet Needs?**
Group discussion facilitated by Alan Leshner

2:50 Break

3:10 **Prioritize Options for Consideration**
Group discussion facilitated by Alan Leshner

4:00 **Recap and Next Steps**

4:15 Adjourn

TAB B: Statement of Work

Planning Meeting for Environmental Health Work

Statement of Work

The environmental health community is facing many broad and complex challenges that need to be addressed in a targeted manner, including climate change and health disparities. The breadth and magnitude of those challenges will require multifaceted and multidisciplinary research objectives and public policies and thus, unprecedented coordination of sectors, disciplines, and communities both within the traditional environmental health community and those that intersect with environmental health on particular challenges.

The Academies is unique in serving as a centralized source of leadership within many scientific disciplines and practices. It is thus uniquely poised to provide leadership, convening power, and scientific advice in the variety of disciplines and sectors that can and should contribute to solving complex environmental health challenges. An important consideration is whether the Academies could provide even more significant leadership to the environmental health community by working more effectively across these disciplines, sectors and policy spheres. To address this consideration, The Academies will organize a consultative meeting of thought leaders in environmental health and related science and policy disciplines. The meeting will include some discussion of the environmental health community's needs for coordinated leadership and extensive discussion with The Academies' leadership on the options available for the Academies to meet such needs, either with a "new initiative" and its possible permutations to be described, or with other approaches. It is envisioned that opportunities to provide greater leadership in environmental health would be identified, with further discussion of how to organize such efforts.

TAB C: Participant Information

Environmental Health Work Planning Meeting
Invited Participant Biographies

Tina Bahadori, Chemical Safety for Sustainability Research Program, EPA
Tina Bahadori Ph.D., was appointed to lead the National Center for Environmental Assessment (NCEA) at the US Environmental Protection Agency (EPA) in January 2017. Prior to this appointment, Dr. Bahadori was the National Program Director for Chemical Safety for Sustainability (CSS) in EPA. CSS research advances sustainable development, use and assessment of existing chemicals and emerging materials by developing and applying computational science, integrated chemical evaluation strategies, and decision-support tools. Before joining EPA in May 2012, she was the Managing Director of the Long-Range Research Initiative at the American Chemistry Council (ACC). Dr. Bahadori is a member of the National Academy of Sciences (NAS) Chemical Sciences Roundtable and an Agency Liaison to the NAS Committee on Emerging Science for Environmental Health Decisions. She also serves on the National Science Foundation's Advisory Committee for Environmental Research and Education. Dr. Bahadori holds a doctorate in Environmental Science and Engineering from the Harvard School of Public Health. From MIT, she holds a Master of Science in Chemical Engineering and Technology and Policy, as well as Bachelor of Science degrees in Chemical Engineering and in Humanities.

John M. Balbus, National Institute of Environmental Health Sciences, NIH
John M. Balbus, M.D., M.P.H., serves as a senior advisor to the Director on public health issues and as NIEHS liaison to its external constituencies, stakeholders, and advocacy groups. He also leads NIEHS efforts on climate change and human health. In this capacity he serves as HHS principal to the U.S. Global Change Research Program, for which he also co-chairs the Interagency Cross-Cutting Group on Climate Change and Human Health. Dr. Balbus' background combines training and experience in clinical medicine with expertise in epidemiology, toxicology, and risk sciences. He has authored studies and lectures on global climate change and health, transportation-related air pollution, the toxic effects of chemicals, and regulatory approaches to protecting susceptible subpopulations. Before joining the NIEHS, Dr. Balbus was Chief Health Scientist for the non-governmental organization Environmental Defense Fund. He served on the faculty of The George Washington University, where he was founding Director of the Center for Risk Science and Public Health, founding co-Director of the Mid-Atlantic Center for Children's Health and the Environment, and Acting Chairman of the Department of Environmental and Occupational Health. He maintains an adjunct faculty appointment at the Johns Hopkins Bloomberg School of Public Health. Dr. Balbus received his A.B. degree in Biochemistry from Harvard University, his M.D. from the University of Pennsylvania, and his M.P.H. from the Johns Hopkins School of Public Health. In addition to current membership on the Institute of Medicine Roundtable on Environmental Health Sciences, Research and Medicine, Dr. Balbus has also served as a member of the EPA Science Advisory Board, the National Research Council's Board on Environmental Studies and Toxicology and the EPA Children's Health Protection Advisory Committee. He is a member of the American College of Physicians, the American Public Health Association, and the Society of Toxicology.

Linda Birnbaum, National Institute of Environmental Health Sciences, NIH
Linda Birnbaum, Ph.D., is the Director of the National Institute of Environmental Health Sciences (NIEHS) of the National Institutes of Health (NIH), and the National Toxicology Program (NTP). A board certified toxicologist, she has served as a federal scientist for over 37 years. Dr. Birnbaum is a former president of the Society of Toxicology, the largest professional organization of toxicologists in the world. She is the author of more than 800 peer-reviewed publications, book chapters, and reports, and is an adjunct professor at several universities, including Duke University and University of North Carolina. A native of New Jersey, Dr. Birnbaum received her M.S. and Ph.D. in microbiology from the University of Illinois at Urbana-Champaign.

Patrick Breysse, National Center for Environmental Health, CDC
Patrick Breysse, Ph.D., joined CDC in December 2014 as the Director of NCEH/ATSDR. Dr. Breysse leads CDC's efforts to investigate the relationship between environmental factors and health. He came to CDC from the Johns Hopkins University where he served as Associate Chair for Educational Programs within the Department of Environmental Health Sciences, Program Director for the Industrial Hygiene Training Program, and co-director of the Johns Hopkins Center for Childhood Asthma in the Urban Environment. During his 30 years at Johns Hopkins, Dr. Breysse established a long-standing expertise in environmental health as well as a strong record as a leader in the field. He has published over 200 peer-reviewed journal articles and has presented at more than 25 scientific meetings in just the past 5 years. His research has focused on the evaluation and control of chemical, biological, and physical factors that can affect health, with a particular concentration on risk and exposure assessment. Dr. Breysse received his PhD in Environmental Health Engineering from Johns Hopkins University in 1985 and completed postdoctoral training at the British Institute for Occupational Medicine in Edinburgh, Scotland. He is also a board certified Industrial Hygienist and an editorial review board member for the Journal of Exposure Science and Environmental Epidemiology.

Thomas A. Burke, Johns Hopkins Bloomberg School of Public Health
Thomas A. Burke, Ph.D., is Associate Dean for Public Health Practice and Training and Professor in 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 Director of the Johns Hopkins Risk Sciences and Public Policy Institute. Until January 2017, Dr. Burke was Science Advisor and Deputy Assistant Administrator at EPA. Dr. Burke was 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 Analysis. 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 four 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 BS from St. Peter's College, his MPH from the University of Texas and his PhD in epidemiology from the University of Pennsylvania.

James M. Crites, Dallas/Fort Worth International Airport (Retired)
James M. Crites served as an Executive Vice President of Operations at Dallas/Fort Worth International Airport. Mr. Crites oversaw the Airport's Asset Management, Energy and Transportation Management, Operations, Planning, Department of Public Safety, Environmental Affairs and Airport Development and Engineering divisions. Mr. Crites joined DFW on October 30, 1995 as Director of Planning and Marketing Research. Prior to this, Mr. Crites worked in several key management positions at American Airlines, Inc. including Managing Director, Airport Services and Financial Planning. He serves as Chairman of the Aviation Group (TRB-AV000), Transportation Research Board, National Academy of Sciences; Chairman of the Committee on Airfield, Airspace Delay and Capacity (TRB-AV050). He serves as a member of the Airport Cooperative Research Program Oversight Committee. Mr. Crites is a member of the National Aeronautics and Space Administration (NASA)

Aeronautics Research Advisory Committee (ARAC), the Airspace Systems Program Subcommittee (ASPS) and the U.S. Government Accountability Office, National Aviation Studies Advisory Panel. Mr. Crites graduated from the University of Illinois with a Bachelor of Science in business administration and subsequently earned a master's in Operations Research and attended the Naval Postgraduate School, Monterey, California.

David T. Dyjack, National Environmental Health Association
David Dyjack, Ph.D., CIH, is NEHA's executive director and chief executive officer since 2015. Dyjack's 30-year career includes expertise in environmental health, emergency preparedness and response, public health informatics, infectious disease, workforce development, governmental infrastructure, maternal and child health, health equity, and chronic disease. A board certified industrial hygienist, Dyjack also has advanced degrees in public health with a doctorate from the University of Michigan and a master's degree from the University of Utah. He most recently served as the associate executive director for programs at the National Association of County and City Health Officials managing the organization's grant and contract portfolio and 75 health professionals in support of the nation's 2800 local health departments. Dyjack has a wealth of management and leadership experience ranging from local health departments to federal agency collaboration.

William Farland, Colorado State University
William Farland, Ph.D., ATS, is an independent consultant on environmental health, the Senior Advisor to the Executive Vice President, Colorado State University and a professor in the Department of Environmental and Radiological Health Sciences, School of Veterinary Medicine and Biomedical Sciences. He also holds faculty positions in the CSU Center for Environmental Medicine and the Department of Environmental and Occupational Health, Colorado School of Public Health. Formerly, Dr. Farland served as Vice President for Research. Dr. Farland holds a Ph.D. from UCLA in cell biology and biochemistry. In 2006, Dr. Farland was appointed Deputy Assistant Administrator for Science in the U.S. Environmental Protection Agency's Office of Research and Development (ORD), after serving as the Acting Deputy Assistant Administrator since 2001. In 2003, Dr. Farland was also appointed Chief Scientist in the Office of the Agency Science Advisor. He served as the EPA's Acting Science Advisor throughout 2005. Prior to that, he was the Director of the ORD's National Center for Environmental Assessment. Dr. Farland's 27 year federal career was characterized by a commitment to the development of national and international approaches to the testing and assessment of the fate and effects of environmental agents. Dr. Farland has continually served on a number of executive-level committees and advisory boards within the Federal government. In 2005-2006, he chaired the Executive Committee of the National Toxicology Program (NTP). He was also a member of the Scientific Advisory Council of the Risk Sciences and Public Policy Institute, Johns Hopkins University School of Hygiene and Public Health; a public member of the American Chemistry Council's Strategic Science Team for its Long-Range Research Initiative, and a member of the Programme Advisory Committee for the WHO's International Programme on Chemical Safety. Dr. Farland served as Chair of an External Advisory Group for the National Institute of Environmental Health Sciences (NIEHS) regarding the future of the Superfund Basic Research Program. In 2013, Dr. Farland was appointed to the Board on Environmental Studies and Toxicology (BEST) of National Research Council (NRC) and took over as Chair of the Board in 2015. From 2010-2015, he chaired a standing committee of the NRC on Emerging Science for Environmental Health Decisions. He was also a member of a NRC Committee to Develop a Research Strategy for Environmental, Health, and Safety Aspects of Engineered Nanomaterials. In 2002, Dr. Farland was recognized by the Society for Risk Analysis with the "Outstanding Risk Practitioner Award," and in 2005 was appointed as a Fellow of the Society. In 2006, he received a Presidential Rank Award for his service as a federal senior executive. In 2007, he was elected as a Fellow, Academy of Toxicological Sciences. Dr. Farland serves on the Editorial Boards of Toxicological Sciences and Current Opinions in Toxicology and continues to teach, publish and serve as a reviewer in environmental toxicology and risk assessment.

Gerald E. Galloway, University of Maryland
Gerald E. Galloway, Jr., Ph.D. is a Glenn L. Martin Institute Professor of Engineering, Department of Civil and Environmental Engineering and an Affiliate Professor, School of Public Policy, University of Maryland, College Park, Maryland, where his focus is on water resources policy and management. He is also a Visiting Scholar at

the US Army Corps of Engineers Institute for Water Resources. He joined the faculty of the University of Maryland following a 38 year career in the U.S. Army, retiring as Brigadier General, and served eight additional years in the federal government, most of which was associated with water resources management. He served for three years as District Engineer for the USACE in Vicksburg, MS and later, for seven years as a Presidential appointee to the Mississippi River Commission. Dr. Galloway is the former Dean of the faculty and academic programs at the Industrial College of the Armed Forces, and former Dean of the academic board, United States Military Academy at West Point where he was also a professor of geography and the first head of the Department of Geography and Environmental Engineering. In 1993 and 1994 he was assigned to the White House to lead an interagency study of the causes of the Great Mississippi River Flood of 1993 and to make recommendations concerning the nation's floodplain management program. He holds a Master's degree in Engineering from Princeton; a Master's in Public Administration from Penn State (Capitol Campus), a Master's in Military Art and Science from the US Army Command and General Staff College and a Ph.D. in Geography (Water Resources) from the University of North Carolina (Chapel Hill).

Lynn Goldman, The George Washington University
Lynn Goldman, M.D., M.S., M.P.H., is the Michael and Lori Milken Dean at Milken Institute School of Public Health at the George Washington University, Dr. Goldman's responsibilities are informed by her broad and deep public policy and academic experience. Prior to joining GWU in August 2010, she was professor of environmental health sciences at The Johns Hopkins Bloomberg School of Public Health. Dr. Goldman was assistant administrator for toxic substances in the U.S. Environmental Protection Agency (EPA) from 1993 through 1998 under President Bill Clinton. Under her watch, the EPA overhauled the nation's pesticide laws, expanded right-to-know requirements for toxin release, reached consensus on an approach to testing chemicals with endocrine-disrupting potential, developed standards to implement lead screening legislation and promoted children's health and global chemical safety. Prior to joining the EPA, Dr. Goldman worked in environmental health for the California Department of Public Health. A member of the National Academy of Medicine, she has chaired or served on numerous committees and forums. She currently serves on the National Academy of Medicine Governing Council and the Governing Board of the National Academy of Sciences. She serves as a member of the Advisory Committee to the Director of the U.S. Centers for Disease Control and Prevention and a member of the Food and Drug Administration Science Board. Among many accolades, Dean Goldman received a 2009 Heinz Award, given to innovators addressing global change caused by the impact of human activities. She was awarded alumna of the year by the UC Berkeley School of Public Health, received the Woodrow Wilson Award for Excellence in Government from Johns Hopkins University and was named one of 150 outstanding alumni by the University of California San Francisco. She also received an honorary doctorate from Örebro University in Sweden for her contributions to chemical legislation in the U.S. and Sweden and her influence on the research conducted at the university's Man Technology Environment Research Centre.

Charles N. Haas, Drexel University
Charles N. Haas, PhD is the L.D. Betz Professor of Environmental Engineering and Head of the Department of Civil, Architectural and Environmental Engineering at Drexel University. His broad research interests include the estimation of human health risks from environmental exposures to pathogens and their control using engineering interventions and drinking water treatment. Specific research activities include assessment of risks from exposures to deliberately released agents; engineering analysis and optimization of chemical decontamination schemes; microbiological risks associated with pathogens in drinking water, biosolids, and foods; novel kinetic models for disinfection processes and process control; and use of computational fluid dynamics for process modeling. Dr. Haas was co-director of the Center for Advancing Microbial Risk Assessment that which was jointly funded by the U.S. Department of Homeland Security and the U.S. Environmental Protection Agency, and has received funding from various sources including NSF, EPA, research foundations and local government agencies. He received his MS from the Illinois Institute of Technology and his PhD in environmental engineering from the University of Illinois at Urbana-Champaign.

Robert J. Kavlock, Office of Research and Development, EPA
Robert J. Kavlock, Ph.D., is the Acting Assistant Administrator for the Office of Research and Development, and EPA's Deputy Assistant Administrator for Science. He has over 33 years of scientific experience and was previously the Director of the National Center for Computational Toxicology (NCCT) within ORD, a post he occupied since its founding in 2005. The ToxCast program within the NCCT is on the leading edge of the state of the science in computational toxicology. Dr. Kavlock began his career at US EPA in 1977 conducting research on the effects of pesticides on prenatal development and progressed to spending 15 years as the Director of the Reproductive Toxicology Division in ORD. He has spent much of his career working on improving the basis for understanding non-cancer health effects, with the most recent efforts focused on computational toxicology. Computational toxicology promises to transform the conduct of toxicological studies through the blending of advances in modern molecular biology with computational sciences. Dr. Kavlock has published more than 200 scientific papers, 16 book chapters, edited three books, including co-editor of WHO's Global Assessment of the State-of-the-Science of Endocrine Disruptors, and serves on a number of international scientific advisory committees. He is the co-recipient of the US Humane Society North American Alternative Award (2008) and ORD's Statesmen of the Year Award (2007), is past president of the Teratology Society and was a finalist for Federal Career Employee (a Sammie award) of the year in 2015. Dr. Kavlock also served as a member of the editorial boards of *Environmental Health Perspectives*, the *Journal of Toxicology and Environmental Health*, and *Birth Defects Research Part B: Developmental and Reproductive Toxicity.* Dr. Kavlock received his B.S. in biology and his Ph.D. in embryology from the University of Miami.

Lonnie King, Ohio State University
Lonnie King, DVM, MS, MPA, ACVPM, is currently the Interim Vice President for Agriculture and Dean of the College of Food Agricultural and Environmental Sciences at the Ohio State University. Prior to this position, he was Dean of the College of Veterinary Medicine at The Ohio State University from 2009 through 2015. In addition, Dr. King is also Professor in the Department of Veterinary Preventive Medicine and held the Ruth Stanton Endowed Chair in Veterinary Medicine. He also served as the Executive Dean for the 7 health science colleges at Ohio State. Before becoming dean at OSU, he was the Director of the National Center for Zoonotic, Vector-Borne, and Enteric Diseases at the Centers for Disease Control and Prevention for 3 years. Dr. King led the Center's activities for surveillance, diagnostics, disease investigations, epidemiology, research, public education, policy development, and disease prevention and public health concerns. Before serving as Director, he was the first chief of the agency's Office of Strategy and Innovation. Dr. King also served as dean of the College of Veterinary Medicine, Michigan State University. As at Ohio State University, he served as the chief executive officer for academic programs, research, the teaching hospital, diagnostic center for population and animal health, basic and clinical science departments, and the outreach and continuing education programs. In 1992, Dr. King was appointed administrator for the Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture, in Washington, DC. In this role, he provided executive leadership and direction for ensuring the health and care of animals and plants, to improve agricultural productivity and competitiveness, and to contribute to the national economy and public health. Dr. King also served as the country's chief veterinary officer for five years and worked extensively in global trade agreements within NAFTA, the World Trade Organization, and the World Animal Health Association (OIE). He also served as the deputy administrator for Veterinary Services of APHIS, USDA where he led national efforts in disease eradication, imports and exports, and diagnostics in both Ames, Iowa and Plum Island. He left APHIS briefly to serve as the Director of the Governmental Relations Division of the American Veterinary Medical Association in Washington, DC. Before beginning his government career. Dr. King was in private veterinary practiceDr. King received his BS and DVM degrees from The Ohio State University. He earned his MS in epidemiology from the University of Minnesota and received his Master's degree in public administration from American University. Dr. King is a board-certified member of the American College of Veterinary Preventive Medicine and has completed the Senior Executive Fellowship program at Harvard University. He served as president of the Association of American Veterinary Medical Colleges. He also served on seven National Academy of Sciences' Committees, including chairing 3 different committees on Identifying and Prioritizing New Preventive Vaccines for Development. Dr. King is one of the developers of the Science, Politics and Animal Health Policy Fellowship Program and lectures extensively on the future of animal

health and veterinary medicine. Dr. King is currently the Vice-Chair of the National Academy of Medicine's Forum on Microbial Threats to Health, was on both the FDA's Board of Scientific Advisors and on the Steering Committee for the National Bio-surveillance Advisory Committee to the CDC, and is past president of the American Veterinary Epidemiology Society. He served as the chair for the National One Health Task Force for the AVMA, which helped start the One Health Initiative in the U.S. Dr. King was elected as a member of the National Academy of Medicine in 2004. He was awarded the John Melcher Leadership Award in 2012 by the AAVMC and is currently serving as vice-chair for the President's Advisory Council on Combating Antibiotic Resistant Bacteria.

Linda McCauley, Emory University
Dr. Linda McCauley, RN, PhD, FAAN, FAAOHN began her tenure as Dean of the Nell Hodgson Woodruff School of Nursing at Emory University in May 2009. Dr. McCauley is a national leader in the area of research on environmental exposures and conducts interdisciplinary research using participatory research models to study pesticide exposures among minority communities. Her work aims to identify culturally appropriate interventions to decrease the impact of environmental and occupational health hazards in vulnerable populations, including workers and young children. Dr. McCauley has been awarded research funding from the National Institutes of Health, the Centers for Disease Control and Prevention, the Department of Defense, and the Department of Veterans' Affairs. Her research has resulted in more than 80 publications, ongoing consultations, leadership on occupational and environmental advisory panels, and testimony to governmental oversight bodies.
Dr. McCauley is a fellow of the American Academy of Occupational Health Nurses and the Academy of Nursing, and participated as a Fellow of Harvard University Kennedy School of Government's Women and Power in the New World. She is a member of the American College of Occupational and Environmental Medicine, the Sigma Theta Tau Honorary Nursing Society, the American Nurses Association, the American Public Health Association and the Institute of Medicine. Prior to coming to Emory, Dr. McCauley held academic appointments at the University of Cincinnati, Oregon Health & Science University, and the University of Pennsylvania. She received her BSN from the University of North Carolina-Chapel Hill and her master's in nursing from Emory University. She completed her doctorate in Environmental Health at the University of Cincinnati.

Bruce S. McEwen, The Rockefeller University
Bruce S. McEwen, Ph.D. obtained his Ph.D. in Cell Biology in 1964 from The Rockefeller University. He is a member of the US National Academy of Sciences, the National Academy of Medicine, and the American Academy of Arts and Sciences. He served as President of the Society for Neuroscience in 1997-98. As a neuroscientist and neuroendocrinologist, McEwen studies environmentally-regulated, variable gene expression in brain, mediated by circulating steroid hormones and endogenous neurotransmitters in relation to brain sexual differentiation and the actions of sex and stress hormones on the adult brain, in particular related to structural and functional plasticity via epigenetic mechanisms. His laboratory discovered adrenal steroid receptors in the hippocampus in 1968. His laboratory combines molecular, anatomical, pharmacological, physiological and behavioral methodologies and relates their findings to human clinical information. His current research focuses on stress effects on amygdala and prefrontal cortex, as well as hippocampus, and his laboratory also investigates sex hormone effects and sex differences in these brain regions involved in cognitive function and mood regulation. He served on the MacArthur Foundation Research Network on Socioeconomic Status and Health, in which he has helped to reformulate concepts and measurements related to stress and stress hormones in the context of human societies, which led to the concept of "allostatic load and overload" that describes the wear and tear on the body and brain from chronic stress and related life style behaviors that lead to dysregulation of physiological stress pathways that are normally protective. He is also a member of the National Council on the Developing Child which focuses on biological embedding of early life experiences and promoting healthy brain development. He is the co-author of a book with science writer, Elizabeth Lasley, for a lay audience called "The End of Stress as We Know It", published in 2002, and "The Hostage Brain" with science writer, the late Harold M. Schmeck, Jr., published in 1994, both of which are now available as eBooks.

Geoffrey S. Plumlee, United States Geological Survey
Geoffrey S. Plumlee (Ph.D. Geochemistry, 1989, Harvard Univ.; B.S. Geology, 1980, Univ. New Mexico) is a senior research geochemist with the U.S. Geological Survey (USGS) specializing in the environment and human health. Growing upon his early career research on the environmental geochemistry of mineral deposits, Dr. Plumlee's recent research focuses on issues involving geochemistry and public health, and the roles for environmental geochemistry in disaster response and preparedness. One aspect of his current health-related research examines the geochemical interactions of minerals with human body fluids, and their linksto toxicity. He has helped lead interdisciplinary teams that assess environmental and health implications of materials produced by disasters, such as dusts generated by the 9/11/2001 World Trade Center collapse, ash and burned soils from numerous wildfires, volcanic ash, and a recent lead poisoning outbreak in Nigeria linked to artisanal gold ore processing. Dr. Plumlee has presented numerous invited, keynote, and plenary lectures to earth, environmental, and health scientists, and is lead or contributing author on over 220 scientific papers and abstracts. He is an adjunct clinical assistant professor at the University of Colorado School of Public Health, where he co-teaches a graduate level class on environmental and occupational health. He has served as advisor to the U.S. Navy Lung Disease Assessment Program and the U.S. Federal Interagency Working Group on Asbestos, and is an expert member of the International Volcanic Health Hazards Network. Dr. Plumlee is currently serving as Chair of the American Geological Institute's Environmental Geoscience Advisory Committee, and served as the 2008 Chair of the Geological Society of America's Geology and Health Division. Dr. Plumlee's work has received national and international recognition via the Society of Economic Geologists' Lindgren Citation for his work in environmental geochemistry, and the U.S. Department of the Interior's Superior Service and Meritorious Service Awards.

Jonathan M. Samet, University of Southern California
Jonathan M. Samet, M.D., M.S. is a pulmonary physician and epidemiologist. Dr. Samet is Professor and Flora L. Thornton Chair for the Department of Preventive Medicine at the Keck School of Medicine at the University of Southern California and Director of the USC Institute for Global Health. Dr. Samet received an A.B. degree in chemistry and physics from Harvard College, before receiving the MD degree from the University of Rochester School of Medicine and Dentistry. He also has an M.S. in epidemiology from the Harvard School of Public Health. Dr. Samet has investigated diverse health issues using epidemiological approaches. His research has focused on the health risks of inhaled pollutants—particles and ozone in outdoor air and indoor pollutants including secondhand smoke and radon. He has also investigated the occurrence and causes of cancer and respiratory diseases, emphasizing the risks of active and passive smoking. He has served on numerous committees concerned with using scientific evidence for the development of policy to protect public health. For several decades, he has been involved in global health, focused on tobacco control and air pollution. He currently chairs the Clean Air Scientific Advisory Committee of the U.S. EPA and also the FDA's Tobacco Products Scientific Advisory Committee. He was appointed to the National Cancer Advisory Board in 2011. Dr. Samet received the Surgeon General's Medallion in 1990 and 2006, the 2004 Prince Mahidol Award for Global Health awarded by the King of Thailand, and the 2006 Public Service Award of the American Thoracic Society. He was elected to the Institute of Medicine of the National Academy of Sciences in 1997.

Gary W. Yohe, Wesleyan University
Gary W. Yohe, Ph.D., is the Huffington Foundation Professor of Economics and Environmental Studies at Wesleyan University; he has been on the faculty at Wesleyan for more than 30 years. He was educated at the University of Pennsylvania, and received his PhD in Economics from Yale University in 1975. He is the author of more than 100 scholarly articles, several books, and many contributions to media coverage of climate issues. Most of his work has focused attention on the mitigation and adaptation/impacts sides of the climate issue. Involved since the early 1990's with the Intergovernmental Panel on Climate Change that received a share of the 2007 Nobel Peace Prize, he served as a Lead Author for four different chapters in the Third Assessment Report that was published in 2001 and as Convening Lead Author for the last chapter of the contribution of Working Group II to the Fourth Assessment Report that was published in 2007. In that Assessment, he also worked with the Core Writing Team to prepare the overall Synthesis Report. He a Convening Lead Author for

Chapter 18 of the Contribution of Working Group II to the Fifth Assessment Report on "Detection and Attribution" and a Lead Author for Chapter 1 on "Points of Departure". Professor Yohe served as a member of the New York City Panel on Climate Change and currently participates as a member of the standing Committee on the Human Dimensions of Global Change of the National Academies of Science. He has testified before the Senate Foreign Relations Committee on the "Hidden (climate change) Cost of Oil" on March 30, 2006, the Senate Energy Committee on the *Stern Review* on February 14, 2007, and the Senate Banking Committee on "Material Risk from Climate Change and Climate Policy" on October 31, 2007. He served as a member of the Adaptation Panel of the National Academy of Sciences' initiative on America's Climate Choices and as a member of an Academy Committee on Stabilization Targets for Atmospheric Greenhouse Gas Concentrations that was chaired by Susan Solomon. Professor Yohe is currently a member of the United States Global Change Research Program Advisory Committee of the National Research Council; and he has been a co-editor, along with Michael Oppenheimer, of Climatic Change since August of 2010. In April of 2011, Professor Yohe was appointed Vice Chair of the National Climate Assessment Development and Advisory Committee by Under-Secretary of Commerce Jane Lubchenko for a term of three years.

Lauren Zeise, Office of Environmental Health Hazard Assessment, California EPA
Lauren Zeise, Ph.D., was appointed by Gov. Brown as Director of OEHHA in December 2016. She had served as acting director since May 2015. Dr. Zeise has been with OEHHA since its inception in 1991. She spent 3 years as Deputy Director for Scientific Affairs and 21 years as Chief of the Reproductive and Cancer Hazard Assessment Branch, which included managing the Proposition 65 program. Prior to OEHHA's creation, she was chief of the cancer unit at the California Department of Health Services and spent several years at the California Public Health Foundation and the U.S. Environmental Protection Agency. She played a leading role in OEHHA's development of CalEnviroScreen, the nation's first comprehensive statewide environmental health screening tool, which is used to identify the California communities most burdened by pollution from multiple sources and most vulnerable to its effects. She also co-led the team that developed the hazard trait regulation for California's Safer Consumer Products program, and she has conducted hundreds of health risk assessments. Dr. Zeise earned her doctorate from Harvard University with a thesis on "Surrogate Measures of Human Cancer Risk." She has served on numerous national and international science advisory committees and boards focusing on environmental public health and improving the way chemicals are tested or evaluated for health risk. These include more than 20 National Academy of Sciences (NAS) committees, numerous U.S. Environmental Protection Agency panels, and advisory committees for the World Health Organization's International Agency for Research on Cancer. She is a member, fellow, former editor, and former councilor of the Society for Risk Analysis and was the 2008 recipient of the Society's Outstanding Risk Practitioner Award. She is also a member of the Society of Toxicology and an honorary lifetime NAS National Associate.

Meeting Facilitator

Alan Leshner, American Association for the Advancement of Science (CEO Emeritus)
Dr. Alan Leshner is Chief Executive Officer, Emeritus, of the American Association for the Advancement of Science (AAAS) and former Executive Publisher of the journal Science. Before this position, Dr. Leshner was Director of the National Institute on Drug Abuse at the National Institutes of Health. He also served as Deputy Director and Acting Director of the National Institute of Mental Health, and in several roles at the National Science Foundation. Before joining the government, Dr. Leshner was Professor of Psychology at Bucknell University. Dr. Leshner is an elected fellow of AAAS, the American Academy of Arts and Sciences, the National Academy of Public Administration, and many other professional societies. He is a member and served on the governing Council of the National Academy of Medicine (previously the Institute of Medicine) of the National Academies of Science. He was appointed by President Bush to the National Science Board in 2004, and then reappointed by President Obama in 2011. Dr. Leshner received Ph.D. and M.S. degrees in physiological psychology from Rutgers University and an A.B. in psychology from Franklin and Marshall College. He has been awarded seven honorary Doctor of Science degrees.

Staff Attendees

Bruce Darling, ***Executive Officer of National Academies of Sciences, Engineering and Medicine***

Division on Earth and Life Studies (DELS)
Greg Symmes, *Executive Director*
Teresa Fryberger, *Director, Board on Environmental Studies and Toxicology (as of January 2017) and Board on Chemical Sciences and Technology*
Marilee Shelton-Davenport, *Board on Chemical Sciences and Technology*
Amanda Staudt, *Director, Board on Atmospheric Sciences and Climate and Polar Research Board*
Ellen Mantus, *Board on Environmental Studies and Toxicology*
Ourania Kosti, *Nuclear and Radiation Studies Board*
Andrea Hodgson, *Board on Life Sciences*

Health and Medicine Division (HMD)
Clyde Behney, *Executive Director*
Kathleen Stratton, *Board on Population Health and Public Health Practice*
Andy Pope, *Director, Board on Health Science Policy*
Julie Pavlin, *Director, Board on Global Health*
David Butler, *Board on Health of Selective Populations*
Justin Snair, *Board on Health Science Policy*

Gulf Research Program (GRP)
LeighAnne Olsen, *Director, Strategic Initiatives*

Division of Behavioral and Social Sciences and Education (DBASSE)
Mary Ellen O'Connell, *Executive Director*
Toby Warden, *Director, Board on Environmental Change and Society and Board on Human-Systems Integration*
Heather Kriedler, *Board on Children, Youth, and Families*

Transportation Research Board (TRB)
Mark Norman, *Director of Program Development and Strategic Initiatives*
Bill Anderson, *Social, Economic and Policy Development*

National Academy of Engineering (NAE)
Greg Pearson

Division on Engineering and Physical Sciences (DEPS)
John Holmes, *Board on Energy and Environmental Systems*

TAB D: Items to Stimulate Discussion

To Stimulate Discussion: Potential Environmental Health Community Needs

The list of needs below is intended only as a starting point for discussion and is certainly not complete; it reflects needs that the National Academies staff have heard expressed by sponsors and other members of the community. Meeting participants will discuss these needs, identify additional needs, and provide detail to inform our discussion of options and approaches for greater National Academies leadership in this area. Meeting participants will also be asked to consider how well these needs are currently being met by the National Academies.

Leadership Needed from the National Academies:

1. Proactive identification or conception of environmental issues that need to be tackled.

2. Convening and facilitating participants from various sectors and disciplines to identify issues and strategize on how to tackle them most effectively. (Identification of National Academies role(s) could be an aspect of this.)

3. A single entry point for coordinated information on activities and contacts at the National Academies.

4. Rapid and coordinated access to experts across divisions, where there is a need for discussion of pressing issues.

5. Solid understanding of agency, academic and affected community needs, to increase the quality and impact of the National Academies work.

Needs for Cross-Discipline and Cross-Sector Coordination from the National Academies:

1. Include an appropriately broad array of sectors and disciplines in environmental health-focused activities.

2. Facilitate communication, identification, and recognition of related efforts (past, current, and anticipated) at the National Academies on environmental health issues, so that messaging is clear and coordinated, and efforts do not appear to be contradictory or duplicative.

3. Maximize impact by enhancing public dissemination of activity information.

4. Ensure that environmental health is considered as appropriate on projects that are not primarily environmental health focused.

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Environmental Health Initiative

Strawman Concept to Stimulate Discussion

Objectives:

Increase impact of the National Academies of Sciences, Engineering, and Medicine on environmental health science and policymaking that relies on science by:

- Taking a broader and more integrative approach to the development and execution of activities across the National Academies.
- Facilitating strategic thinking across stakeholder sectors[1] on how to tackle complex problems, including opportunities to combine resources and interests synergistically.
- Serving as a resource to develop cross-disciplinary activity framings when needed to address complex issues or shared problems.
- Enhancing/Raising the profile and utilization of the National Academies environmental health work, with coordinated communication and outreach.

Key Components:

- **Environmental Health Advisory Group** of environmental health leaders created to:
  - Advise the Presidents of the National Academy of Sciences, Engineering, and Medicine on environmental health issues
  - Provide oversight and advice to ensure integrated and effective execution of activities

- **Annual forum** for community-wide, cross-sector, cross-disciplinary strategic planning.

- **Environmental health staff coordination group** to support the advisory group and ensure internal coordination and communication among National Academies' units.

- **Dedicated communication staffing/resources** to facilitate external communication and outreach.

- **Institutional effort** to identify best practices in designing incentives and structures that facilitate collaboration in development and execution of activities.

[1] i.e., agencies, communities, industry, nonprofits, academics, state and local governments

TAB E: Information about the National Academies of Science, Engineering and Medicine

Advising the Nation. Advancing the Discussion. Connecting New Frontiers.

Society is facing an array of complex policy questions. The National Academies of Sciences, Engineering, and Medicine are distinctively qualified to provide nonpartisan, objective guidance for decision makers on pressing issues. As we have done since our founding in 1863, we marshal the energy and intellect of the nation's critical thinkers to respond to policy challenges with science, engineering, and medicine at their core.

Through a meticulous process of information collection, evidence analysis, and deliberation, our studies provide blueprints for progress. By shining a spotlight on subjects and facilitating dialogue across disciplines, our work advances understanding of critical issues. The needs of the nation—and therefore the topics we study—change over time, but our commitment to putting sound advice to work for the public good does not.

Advising the Nation

The work of the National Academies spurs progress by connecting understandings of science, engineering, and medicine to advising national policies and practice. Our studies have lasting impacts, from guiding NASA's agenda for space exploration, to charting the course for improving the quality of health care, to proposing effective strategies to guard against cyberattacks.

When faced with a complex question, we bring together experts from across disciplines to look at the evidence with fresh eyes and openness to insights from other fields. These study committees survey the landscape of relevant research, hold public meetings to gather information, and deliberate to reach consensus, which results in a shared understanding of what the evidence reveals and the best path forward.

We shield committee deliberations and conclusions from influence by sponsors and special interests and make certain each report undergoes rigorous peer review to ensure that our advice is grounded in the best available evidence. This provides policy makers assurance that the results reflect the facts and the combined expertise of the science, engineering, and medical communities.

Advancing the Discussion

The National Academies also convene workshops, symposia, and other events that bring together experts and practitioners to consider issues related to science, engineering, and medicine and their implications for policy and practice. In a space free from partisan pressures and preset agendas, participants share their own research and perspectives and also look beyond them—making connections within and across disciplines, sharpening questions, sparking new ideas, and exploring possible solutions.

Some workshops focus on specialized areas, while others tackle big questions. When necessary, we can swiftly gather the nation's top minds to address matters of urgent importance, such as how to combat an emerging virus or respond to a natural disaster.

When there is a need for ongoing dialogue, our roundtables and forums—which are organized around a topic—offer stakeholders an opportunity to build relationships and unravel complicated issues over time.

Regardless of the format, these gatherings go beyond bringing people together. They advance conversation, catalyze movement around an issue, and generate bold ideas.

Connecting New Frontiers

In addition to our landmark studies and convening activities, the National Academies pursue a range of initiatives to strengthen the scientific, engineering, and medical fields and their capacity to contribute to human welfare. This includes supporting fellowship programs that foster the career development of young scientists and collaborating with the academies of other nations that advance science globally.

We strive to bring the benefits of science and technology to the economic, cultural, and industrial life of the nation and to the health and well-being of its citizens. In the same way the institution contributed to landmarks of American achievement such as the Apollo space program and the Human Genome Project, we continue to kindle new frontiers in science, engineering, and medicine.

Our activities help marshal new knowledge as it develops, identifying how it can be used to

meet the needs of the public and decision makers— helping move us all toward a healthier, safer, and more prosperous future.

Affecting Policy and Practice

Our reports and convening activities have a wide range of impacts on policy and practice, on scales ranging from the global to the individual. They guide the development of federal laws and regulations, improve the effectiveness of government programs, shape the direction of research fields, and inform public knowledge and dialogue about issues of critical importance.

One of our reports influenced the development of federal fuel economy standards for the nation's cars and trucks. Another provided evidence for the toxicity of secondhand smoke and prompted airlines to ban smoking on planes. When Ebola reached U.S. shores for the first time, we quickly gathered experts to identify what is known about the disease and its transmission.

Free Access for All

Individuals around the world benefit from open access to our thousands of publications at www.nap.edu. Each year we receive thousands of comments from readers about how they plan to use our work to enhance their lives and communities. For example, a reader recently told us, "I am a trauma surgeon working in Bogotá, Colombia, and this material will be very useful in organizing prehospital and hospital trauma care in order to prevent deaths." He was referring to our report *A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury*

By applying our insights to a range of challenges, readers have helped advance change, improve their communities, and share knowledge with others.

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December 2016

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National Academy of Sciences
Marcia K. McNutt, *President*

National Academy of Medicine
Victor J. Dzau, *President*

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products & services

The nation faces an array of complex policy questions. The National Academies of Sciences, Engineering and Medicine are distinctly qualified to provide nonpartisan, objective guidance on pressing issues. The National Academies provides this guidance through a diverse set of products and services.

consensus studies

A consensus study, which may be mandated by Congress or requested by federal agencies or other organizations, begins with a charge to the committee from the sponsor(s) and involves intensive data and information gathering. Depending on the nature of the charge, committees gather data in various ways—through literature reviews, public workshops, expert testimony, or commissioned papers, for example.

A committee of 12 to 15 expert members analyzes the data and develops a set of conclusions and actionable recommendations in response to the charge. Before the committee's report is published, it is reviewed by a group of independent peer reviewers. Once released, the consensus report is communicated widely through press conferences, briefings, and derivative publications. These traditional consensus studies generally require 15 to 18 months for completion.

roundtables and Forums

Roundtables, also called forums, provide a neutral setting in which representatives from multiple sectors convene to examine emerging topics of mutual interest and concern. As a part of roundtable discussions, public workshops may be held to illuminate scientific or policy developments. Often, as a result of these workshops, workshop summaries or workshop proceedings are published to further communicate the information and dialogue to a wider audience. It is important to note that roundtable activities and discussions do not result in recommendations. The membership of a roundtable or forum is usually 20 to 30 individuals and consists of sponsor representatives and other key stakeholders.

standing committees

Standing committees are convened when the National Academies enter into an agreement with a sponsor to address a defined set of tasks, which are usually determined at the beginning of each year. Standing committees allow the National Academies to be responsive to emerging needs by maintaining a continuous dialogue with the sponsoring organization. Standing committees can quickly convene workshops and conferences for prompt and visible public debate and discussion. Standing committees usually consist of 8 to 12 core members. Their discussions can lead to a recommendation for a consensus study, which would involve the appointment of an ad hoc committee .

Workshops, conFerences, & symposia

The National Academies holds a wide range of workshops, conferences, and symposia. Often, these activities are useful for convening key experts and stakeholders to report on the state of knowledge in an area, define and elucidate problems, or discuss the progress of policy change following the release of a report. These activities usually require the appointment of a planning committee to organize the workshop, select and invite speakers and discussants, and moderate the sessions. These workshops can result in a workshop summary or workshop proceedings, neither of which may include recommendations.

eXpert meetings

At times, an organization calls on the National Academies to identify a number of experts who can be approached to advise the organization. This service entailes identifying the experts, arranging a meeting between the experts and the organization, and assisting with the meeting agenda. No published product results, and the discussion does not represent official National Academies advice or conclusions.

planning meetings

Planning meetings are designed as a starting point for the examination of questions in health policy that are emerging, complex, or poorly defined. These meetings include a full range of stakeholder and expert participation. The meetings are usually 1 or 2 days in duration, and often lay the groundwork for future National Academies activities. A planning meeting can result in a proposal for a larger activity.

communicating our messages

Special communication activities may be undertaken for individual consensus reports or clusters of reports that are of special interest to stakeholders and the public. Communication activities can take many shapes, but most often include report highlights, fact sheets, videos, infographics, social media, or more complex derivative products that are based on a consensus report and targeted for specific audiences. Media campaigns, special events, and regional dissemination workshops are examples of larger-scale dissemination activities.

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TAB F: Examples to Illustrate Range of Environmental Health Work

Examples to Illustrate Range of Environmental Health Work

What follows are descriptions of two ongoing convening activities and a long list of reports, dating back to 2014. These documents are not intended to be exhaustive but rather to give a flavor of the range of activities focused on environmental health, as well as the topic areas that some might consider as intersecting with environmental health.

EMERGING SCIENCE FOR ENVIRONMENTAL HEALTH DECISIONS

The National Academies of Science, Engineering and Medicine
Standing Committee on Use of Emerging Science for
Environmental Health Decisions

Scientific discoveries, new tools and improved approaches have rapidly expanded the field of environmental health—the study of environmental influences on human health and disease. Evaluating the utility and importance of new findings derived from new tools and new approaches in guiding public health decisions can be a daunting challenge.

The National Institute for Environmental Health Sciences[1] (NIEHS) has asked the National Academies (NAS) to facilitate communication among government, industry, environmental groups, and the academic community about scientific advances that may be used in the identification, quantification, and control of environmental impacts on human health.

See next page for a list of our previous and upcoming workshops and visit us at http://nas-sites.org/emergingscience/ for additional details.

Committee

Kim Boekelheide (co-chair), Brown University
Melissa Perry (co-chair), George Washington University
Lesa Aylward, Summit Toxicology
Weihsueh Chiu, Texas A&M University
Kevin Elliott, Michigan State University
Gary Ginsberg, Connecticut Department of Public Health
Norbert Kaminski, Michigan State University
Margaret Karagas, Dartmouth College
Patrick McMullen, ScitoVation
Gary Miller, Emory University
Chirag Patel, Harvard Medical School
Kristi Pullen-Fedinick, Natural Resources Defense Council
Reza Rasoulpour, Dow AgroSciences
Joel Schwartz, Harvard School of Public Health
Gina Solomon, California Environmental Protection Agency

The Emerging Science standing committee holds three meetings per year on the use of new discoveries, tools, and approaches for guiding environmental health decisions. These forums provide a public venue for communication across a variety of stakeholders on new and exciting advances in science with potential impacts on individual, community, and public policy decisions.

[1] The NIEHS is part of the National Institutes of Health with a mission to reduce the burden of human illness and disability by understanding how the environment influences the development and progression of human disease.

Workshops

Advances in Causal Understanding for Risk-based Decision Making; March 6-7, 2017

Personal Environmental Exposure Measurements: Making Sense and Making Use of Emerging Capabilities; November 16-17, 2016

Environment and Health: What's the Human Microbiome Have to Do with It?; January 14-15, 2015

Interindividual Variability: New Ways to Study and Implications for Decision-Making; September 30 – October 1, 2015

Metabolomics as a Tool for Characterizing the Exposome; May 28-29, 2015

Meeting of the ESEH Committee & Government Liaisons; December 11-12, 2014

Modeling the Health Risks of Climate Change; November 3-4, 2014

The Potential of the Tissue Chip for Environmental Health Studies; July 21-22, 2014

Integrating Environmental Health Data to Advance Discovery; January 10-11, 2013

Exploring Human Genomic Plasticity and Environmental Stressors: Emerging Evidence on Telomeres, Copy Number Variation, and Transposons; October 4-5, 2012

Systems Biology-Informed Risk Assessment; June 14-15, 2012

Biological Factors that Underlie Individual Susceptibility to Environmental Stressors and their Implications for Decision-Making; April 18-19, 2012

Emerging Technologies for Measuring Individual Exposomes; December 8-9, 2011

Applying 21st Century Toxicology to Green Chemical and Material Design; September 20-21, 2011

Mixtures and Cumulative Risk Assessment: New Approaches Using the Latest Science and Thinking about Pathways; July 27-28, 2011

Interplay of the Microbiome, Environmental Stressors, and Human Health; April 27-28, 2011

Use of *In Utero* and Post-Natal Indicators to Predict Health Outcomes Later in Life; Oct. 14–15, 2010

Stem Cell Models for Environmental Health; June 3–4, 2010

The Exposome: A Powerful Approach for Evaluating Environmental Exposures and Their Influences on Human Disease; February 25-26, 2010

Computational Toxicology: From Data to Analyses to Application; September 21-22, 2009

Use of Emerging Science and Technologies to Explore Epigenetic Mechanisms Underlying the Developmental Basis for Disease; July 30-31, 2009

Agendas, descriptions, archived webcasts, presentations, and newsletter highlights for Emerging Science meetings are available online at http://nas-sites.org/emergingscience/.

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THE ROUNDTABLE ON ENVIRONMENTAL HEALTH SCIENCES, RESEARCH, AND MEDICINE

The Roundtable on Environmental Health Sciences, Research, and Medicine was established in 1998 and provides a structured opportunity for regular and open communication among interested experts from a variety of government, academic, industry, and consumer groups in a neutral setting. Through meetings and workshops, the Roundtable facilitates discussion of key issues in environmental health sciences and decision making, identification of vulnerable populations to environmental hazards, and translation of environmental health research into public health practice. Workshop proceedings are published but do not contain conclusions and recommendations. By focusing on current and emerging issues that are being considered by decision makers, the Roundtable facilitates the discussion of the contribution of environmental health to complex societal problems.

ROUNDTABLE MEMBERS

Frank Loy, LL.B. (*Chair*) Washington, DC
U.S. Representative to the 66th Session of the General Assembly of the United Nations
Lynn R. Goldman, M.D., M.P.H., *(Vice Chair)* Milken Institute School of Public Health George Washington University, Washington, DC
Henry A. Anderson, M.D., University of Wisconsin, Madison, WI
John M. Balbus, M.D., M.P.H., National Institute of Environmental Health Sciences National Institutes of Health, Bethesda, MD
Faiyaz Bhojani, M.D., MBBS, Global Manufacturing and Chemicals Royal Dutch Shell, Amsterdam, Non-USA
Linda S. Birnbaum, Ph.D., DABT, ATS, National Institute of Environmental Health Sciences National Institutes of Health, Research Triangle Park, NC
Wayne E. Cascio, M.D., FACC, FAHA, National Health and Environmental Effects Research Laboratory US EPA Initiative Office of Public Engagement, Research Triangle Park, NC
Luz Claudio, Ph.D., Community Outreach & Education Mount Sinai School of Medicine, New York, NY
Dennis J. Devlin, Ph.D., ExxonMobil Corporation, Irving, TX
Richard A. Fenske, Ph.D., M.P.H., School of Public Health and Community Medicine University of Washington, Seattle, WA
David D. Fukuzawa, M.S.A., The Kresge Foundation, Troy, MI
Bernard D. Goldstein, M.D., Department of Environmental and Occupational Health Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA
Richard J. Jackson, MD, MPH,Hon. AIA, Hon. ASLA, Department of Environmental Health Sciences, Fielding School of Public Health University of California, Los Angeles, Los Angeles, CA
Suzette M. Kimball, Ph.D., United States Geological Survey United States Department of the Interior, Reston, VA
Jay Lemery, M.D. , FACEP, FAWM, School of Medicine University of Colorado, Aurora, CO
Maureen Y. Lichtveld, M.D., M.O.H., Department of Environmental Health Sciences Tulane University School of Public Health and Tropical Medicine, New Orleans, LA
Al McGartland, Ph.D., National Center for Environmental Economics Environmental Protection Agency, Washington, DC
David M. Michaels, Ph.D., M.P.H., George Washington University, Washington, DC
Susan L. Santos, Ph.D., M.S., School of Public Health Rutgers University, Medford, MA
Kirk P. Smith, Ph.D., School of Public Health University of California, Berkeley, Berkeley, CA
Agnes Soares da Silva, M.D., M.P.H., Sustainable Development and Health Equity Pan American Health Organization / WHO, Washington, DC
John D. Spengler, Ph.D., Environmental Health and Human Habitation Harvard School of Public Health, Boston, MA
G. David Tilman, Ph.D., Department of Ecology, Evolution and Behavior University of Minnesota, St. Paul, MN
Juli Trtanj, MES, Climate Program Office NOAA, Silver Spring, MD
Patricia Verduin, Ph.D., Global Research & Development Colgate-Palmolive Company, Piscataway, NJ
Dick Zimmer, LL.B, Zimmer Strategies, Inc., Flemington, NJ

Health and Medicine Division

PUBLICATIONS

The Interplay Between Environmental Chemical Exposures and Obesity: Workshop Summary
Principles and Obstacles for Sharing Data from Environmental Health Research: Workshop Summary
Identifying and Reducing Environmental Health Risks of Chemicals in Our Society: Workshop Summary
Understanding the Connections Between Coastal Waters and Ocean Ecosystem Services and Human Health - Workshop Summary
Sustainable Diets: Food for Healthy People and a Healthy Planet - Workshop Summary
Including Health in Global Frameworks for Development, Wealth, and Climate Change - Workshop Summary
The Nexus of Biofuels, Climate Change, and Human Health - Workshop Summary
Global Development Goals and Linkages to Health and Sustainability - Workshop Summary
Health Impact Assessment of Shale Gas Extraction - Workshop Summary
Public Health Linkages with Sustainability - Workshop Summary
Global Environmental Health: Research Gaps and Barriers for Providing Sustainable Water, Sanitation, and Hygiene Services - Workshop Summary
Environmental Health Sciences Decision Making: Risk Management, Evidence, and Ethics - Workshop Summary
Environmental Public Health Impacts of Disasters: Hurricane Katrina - Workshop Summary
Green Healthcare Institutions; Health, Environment, and Economics - Workshop Summary
Global Environmental Health in the 21st Century: From Governmental Regulation to Corporate Social Responsibility - Workshop Summary
Rebuilding the Unity of Health and the Environment in Rural America - Workshop Summary
Implications of Nanotechnology for Environmental Health Research - Workshop Summary
Rebuilding the Unity of Health and the Environment: The Greater Houston Metropolitan Area - Workshop Summary
Public Health Risks of Disasters: Communication, Infrastructure, and Preparedness - Workshop Summary
From Source Water to Drinking Water – Workshop Summary
Environmental Health Indicators: Bridging the Chasm of Public Health and the Environment - Workshop Summary
Ensuring Environmental Health in Postindustrial Cities - Workshop Summary
The Role of Environmental Hazards in Premature Birth - Workshop Summary
Health and the Environment in the Southeastern United States: Rebuilding the Unity - Workshop Summary
Cancer and the Environment: Gene-Environment Interactions - Workshop Summary
Rebuilding the Unity of Health and the Environment: A New Vision of Environmental Health for the 21st Century - Workshop Summary

Upcoming Workshop: Effects of Climate Change on Population Health (joint with the Roundtable on Population Health and Public Health Improvement); 3/13/17.

For more information, contact Roundtable Director, Kathleen Stratton (202.334.1723; kstratton@nas.edu).

Title	Year
ENVIRONMENT AND ENVIRONMENTAL STUDIES	
Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide	2017
Using 21st Century Science to Improve Risk-Related Evaluations	2016
Characterizing Risk in Climate Change Assessments: Proceedings of a Workshop	2016
Pathways to Urban Sustainability: Challenges and Opportunities for the United States	2016
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 20	2016
The Power of Change: Innovation for Development and Deployment of Increasingly Clean Electric Power Technologies	2016
Commercial Aircraft Propulsion and Energy Systems Research: Reducing Global Carbon Emissions	2016
The Interplay Between Environmental Chemical Exposures and Obesity: Proceedings of a Workshop	2016
New Insights into Microbiome Study for Environmental Health: Proceedings of a Workshop in Brief	2016
Using Graywater and Stormwater to Enhance Local Water Supplies: An Assessment of Risks, Costs, and Benefits	2016
Review of the U.S. Global Change Research Program's Update to the Strategic Plan Document	2016
Refinements to the Methods for Developing Spacecraft Exposure Guidelines	2016
Interindividual Variability: New Ways to Study and Implications for Decision Making: Workshop in Brief	2016
Use of Metabolomics to Advance Research on Environmental Exposures and the Human Exposome: Workshop in Brief	2016
Integrating Landscape Approaches and Multi-Resource Analysis into Natural Resource Management: Summary of a Workshop	2016
Assessment of Approaches to Updating the Social Cost of Carbon: Phase 1 Report on a Near-Term Update	2016
Spills of Diluted Bitumen from Pipelines: A Comparative Study of Environmental Fate, Effects, and Response	2016
Reducing the Use of Highly Enriched Uranium in Civilian Research Reactors	2016
Enhancing Participation in the U.S. Global Change Research Program	2016
Review Criteria for Successful Treatment of Hydrolysate at the Blue Grass Chemical Agent Destruction Pilot Plant	2015
Application of Modern Toxicology Approaches for Predicting Acute Toxicity for Chemical Defense	2015

Review of the Draft Interagency Report on the Impacts of Climate Change on Human Health in the United States	2015
Modeling the Health Risks of Climate Change: Workshop Summary	2015
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 19	2015
Opportunities for the Gulf Research Program: Monitoring Ecosystem Restoration and Deep Water Environments: Summary of a Workshop	2015
Review of California's Risk-Assessment Process for Pesticides	2015
Radioactive Waste Management: An Interim Report of the Committee on Radioactive Waste Management	2015
Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2: Pilot Planning	2014
The Science of Responding to a Nuclear Reactor Accident: Summary of a Symposium	2014
A Framework to Guide Selection of Chemical Alternatives	2014
Risks and Risk Governance in Shale Gas Development: Summary of Two Workshops	2014
Sustainability Concepts in Decision-Making: Tools and Approaches for the US Environmental Protection Agency	2014
Review of the Formaldehyde Assessment in the National Toxicology Program 12th Report on Carcinogens	2014
Rethinking the Components, Coordination, and Management of the U.S. Environmental Protection Agency Laboratories	2014
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 18	2014
Review of the Styrene Assessment in the National Toxicology Program 12th Report on Carcinogens	2014
Can Earth's and Society's Systems Meet the Needs of 10 Billion People? Summary of a Workshop	2014
Mississippi River Water Quality and Interstate Collaboration: Summary of a Workshop	2014
Responding to Oil Spills in the U.S. Arctic Marine Environment	2014
Best Practices for Risk-Informed Decision Making Regarding Contaminated Sites: Summary of a Workshop Series	2014
Review of EPA's Integrated Risk Information System (IRIS) Process	2014
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 17	2014
Review of the Environmental Protection Agency's State-of-the-Science Evaluation of Nonmonotonic Dose-Response Relationships as they Apply to Endocrine Disruptors	2014
Advancing Land Change Modeling: Opportunities and Research Requirements	2014

Pathways to Urban Sustainability: Perspective from Portland and the Pacific Northwest: Summary of a Workshop	2014
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 16	2014
Climate Change: Evidence and Causes	2014
An Ecosystem Services Approach to Assessing the Impacts of the Deepwater Horizon Oil Spill in the Gulf of Mexico	2013
Delta Waters: Research to Support Integrated Water and Environmental Management in the Lower Mississippi River	2013
A Review of Genwest's Final Report on Effective Daily Recovery Capacity (EDRC): A Letter Report	2013
Research Progress on Environmental, Health, and Safety Aspects of Engineered Nanomaterials	2013
Critical Aspects of EPA's IRIS Assessment of Inorganic Arsenic: Interim Report	2013
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 15	2013
Effects of U.S. Tax Policy on Greenhouse Gas Emissions	2013
Assessing Risks to Endangered and Threatened Species from Pesticides	2013
Protecting National Park Soundscapes	2013
Environmental Decisions in the Face of Uncertainty	2013
A Review of the Draft 2013 National Climate Assessment	2013
Alternatives for Managing the Nation's Complex Contaminated Groundwater Sites	2013
Climate and Social Stress: Implications for Security Analysis	2013
Pathways to Urban Sustainability: A Focus on the Houston Metropolitan Region: Summary of a Workshop	2012
A National Strategy for Advancing Climate Modeling	2012
Sustainable Development of Algal Biofuels in the United States	2012
Science for Environmental Protection: The Road Ahead	2012
Preparing for the Third Decade of the National Water-Quality Assessment Program	2012
Climate Change: Evidence, Impacts, and Choices: PDF Booklet	2012
Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future	2012

Improving Water Quality in the Mississippi River Basin and Northern Gulf of Mexico: Strategies and Priorities	2012
Disposal Options for the Rocket Motors From Nerve Agent Rockets Stored at Blue Grass Army Depot	2012
Understanding Water Reuse: Potential for Expanding the Nation's Water Supply Through Reuse of Municipal Wastewater	2012
Sustainable Water and Environmental Management in the California Bay-Delta	2012
Exposure Science in the 21st Century: A Vision and a Strategy	2012
Scientific Review of the Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit	2012
Assessment of Agent Monitoring Strategies for the Blue Grass and Pueblo Chemical Agent Destruction Pilot Plants	2012
Remediation of Buried Chemical Warfare Materiel	2012
Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia	2012
Water Reuse: Potential for Expanding the Nation's Water Supply Through Reuse of Municipal Wastewater	2012
Tracking Radiation Exposure from Medical Diagnostic Procedures: Workshop Report	2012
Review of the EPA's Economic Analysis of Final Water Quality Standards for Nutrients for Lakes and Flowing Waters in Florida	2012
Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase I	2012
A Research Strategy for Environmental, Health, and Safety Aspects of Engineered Nanomaterials	2012
Ecosystem Services: Charting a Path to Sustainability	2012
Challenges in Characterizing Small Particles: Exploring Particles from the Nano- to Microscale: A Workshop Summary	2012
Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 11	2012
Breast Cancer and the Environment: A Life Course Approach	2012
Letter Report on: The Blue Grass Chemical Agent Destruction Pilot Plant's Water Recovery System	2012
Review of Studies of Possible Toxic Effects from Past Environmental Contamination at Fort Detrick: A Letter Report	2012
Macondo Well Deepwater Horizon Blowout: Lessons for Improving Offshore Drilling Safety	2012
A Sustainability Challenge: Food Security for All: Report of Two Workshops	2012
Progress, Challenges, and Opportunities for Converting U.S. and Russian Research Reactors: A Workshop Report	2012

A Review of the U.S. Global Change Research Program's Draft Strategic Plan	2012

HEALTH AND MEDICINE

Climate and Health Challenges Posed by Black Carbon: Proceedings of a Workshopâ€"in Brief	2016
The Interplay Between Environmental Chemical Exposures and Obesity: Proceedings of a Workshop	2016
Principles and Obstacles for Sharing Data from Environmental Health Research: Workshop Summary	2016
Interindividual Variability: New Ways to Study and Implications for Decision Making: Workshop in Brief	2016
Use of Metabolomics to Advance Research on Environmental Exposures and the Human Exposome: Workshop in Brief	2016
Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2: Pilot Planning	2014
Identifying and Reducing Environmental Health Risks of Chemicals in Our Society: Workshop Summary	2014
Understanding the Connections Between Coastal Waters and Ocean Ecosystem Services and Human Health: Workshop Summary	2014
Including Health in Global Frameworks for Development, Wealth, and Climate Change: Workshop Summary	2014
The Nexus of Biofuels, Climate Change, and Human Health: Workshop Summary	2014
Sustainable Diets: Food for Healthy People and a Healthy Planet: Workshop Summary	2014
Health Impact Assessment of Shale Gas Extraction: Workshop Summary	2014

ENERGY

Title	**Copyright Year**
The Power of Change: Innovation for Development and Deployment of Increasingly Clean Electric Power Technologies	2016
Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants: Phase 2	2016
Chemistry and Engineering of Shale Gas and Tight Oil Resource Development: Workshop in Brief	2015
Review of the 21st Century Truck Partnership: Third Report	2015
Cost, Effectiveness, and Deployment of Fuel Economy Technologies for Light-Duty Vehicles	2015
Addressing the Energy-Water Nexus: 2013-2014 Meetings in Brief	2015

Overcoming Barriers to Deployment of Plug-in Electric Vehicles	2015
Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants	2014
Reducing the Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two: First Report	2014
Risks and Risk Governance in Shale Gas Development: Summary of Two Workshops	2014
The Future of Advanced Nuclear Technologies: Interdisciplinary Research Team Summaries	2014

TRANSPORTATION AND ENVIRONMENT	**Copyright Year**
Guidebook for Selecting Methods to Monitor Airport and Aircraft Deicing Materials	2017
Clean Water Act Requirements for Airports	2016
Transportation Resilience: Adaptation to Climate Change	2016
Exhaust Emissions from In-Use General Aviation Aircraft	2016
Tracking Alternative Jet Fuel	2016
Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids	2011
Guidebook for Assessing Airport Lead Impacts	2016
Airport Sustainability Practices	2016
Deriving Benefits from Alternative Aircraft-Taxi Systems	2016
Helicopter Noise Information for Airports and Communities	2016
Application of Remote Real-Time Monitoring to Offshore Oil and Gas Operations	2016
Navigating Multi-Agency NEPA Processes to Advance Multimodal Transportation Projects	2016
Water Efficiency Management Strategies for Airports	2016
Evaluation and Assessment of Environmentally Sensitive Stream Bank Protection Measures	2016
Transformational Technologies in Transportation: State of the Activities	2016
Methodology to Develop the Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool	2016

Airport Sustainability Practicesâ€"Drivers and Outcomes for Small Commercial and General Aviation Airports	2016
Trends and Issues in Marine Transportation and the Environment	2016
Developing a Business Case for Renewable Energy at Airports	2016
Evaluating Methods for Determining Interior Noise Levels Used in Airport Sound Insulation Programs	2016
Methodology to Improve AEDT Quantification of Aircraft Taxi/Idle Emissions	2016
Transportation for Sustainability: An International Conference	2016
Field Evaluation of Reflected Noise from a Single Noise Barrierâ€"Phase 1	2016
Recommended Community Noise Model Enhancements to Improve Prediction of Helicopter Activity Impacts	2015
Improving Ground Support Equipment Operational Data for Airport Emissions Modeling	2015
Climate Change Adaptation Planning: Risk Assessment for Airports	2015
Applying an SMS Approach to Wildlife Hazard Management	2015
Environmental Performance Measures for State Departments of Transportation	2015
Strategic Issues Facing Transportation, Volume 4: Sustainability as an Organizing Principle for Transportation Agencies	2014
Strategic Issues Facing Transportation, Volume 2: Climate Change, Extreme Weather Events, and the Highway System: Practitionerâ€™s Guide and Research Report	2014
Operator Responsibilities under NPDES and Stormwater Management BMPS under Owner/Airport's Operating Permits	2015
Renewable Energy as an Airport Revenue Source	2015
Lessons Learned from Airport Sustainability Plans	2015
Understanding Airport Air Quality and Public Health Studies Related to Airports	2015
Applying Whole Effluent Toxicity Testing to Aircraft Deicing Runoff	2015
Claims Related to Stormwater Discharge	2015
Quantifying Aircraft Lead Emissions at Airports	2015
Best Practices Guidebook for Preparing Lead Emission Inventories from Piston-Powered Aircraft with the Emission Inventory Analysis Tool	2015
Guidebook for Designing and Managing Rights-of-Way for Carbon Sequestration and Biomass Generation	2015

Volume Reduction of Highway Runoff in Urban Areas: Final Report and NCHRP Report 802 Appendices C through F	2015
Volume Reduction of Highway Runoff in Urban Areas: Guidance Manual	2015
Quantifying Transitâ€™s Impact on GHG Emissions and Energy Useâ€"The Land Use Component	2015
Legal Aspect of Environmental Permitting in the Emergency Response Environment	2015
Effect of Public-Private Partnerships and Nontraditional Procurement Processes on Highway Planning, Environmental Review, and Collaborative Decision Making	2013
Integration of National-Level Geospatial Ecological Tools and Data	2014
Input Guidelines for Motor Vehicle Emissions Simulator Model, Volume 3: Final Report	2015
Input Guidelines for Motor Vehicle Emissions Simulator Model, Volume 2: Practitionersâ €™ Handbook: Project Level Inputs	2015
Balancing Airport Stormwater and Bird Hazard Management	2015
Innovative Airport Responses to Threatened and Endangered Species	2014
Prototype Airport Sustainability Rating Systemâ€"Characteristics, Viability, and Implementation Options	2014
Understanding Microbial Biofilms in Receiving Waters Impacted by Airport Deicing Activities	2014
Integrated Noise Model Accuracy for General Aviation Aircraft	2014
Long-Term Performance and Life-Cycle Costs of Stormwater Best Management Practices	2014
Enhancing the Durability of Asphalt Pavements: Papers from a Workshop	2014
Application of Geospatial Ecological Tools and Data in the Planning and Programming Phases of Delivering New Highway Capacity: Proof of Conceptâ€"Contra Costa County Transportation Authority	2014
Managerâ€™s Guide to the Integrated Ecological Framework	2014
Bridge Stormwater Runoff Analysis and Treatment Options	2014
Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance	2014
Habitat Management to Deter Wildlife at Airports	2014
Response to Extreme Weather Impacts on Transportation Systems	2014
Guidance for Managing NEPA-Related and Other Risks in Project Delivery, Volume 2: Expediting NEPA Decisions and Other Practitioner Strategies for Addressing High Risk Issues in Project Delivery	2014
Sustainability Strategies Addressing Supply-Chain Air Emissions	2014

The Role of the Airport Sponsor in Airport Planning and Environmental Reviews of Proposed Development Projects Under the National Environmental Policy Act (NEPA) and State Mini-NEPA Laws	2014
Measuring and Removing Dissolved Metals from Stormwater in Highly Urbanized Areas	2014
Outcomes of Green Initiatives: Large Airport Experience	2014
Critical Issues in Aviation and the Environment 2014	2014
Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 1: Final Report	2014
Guidance for Estimating Airport Construction Emissions	2014
Guidelines for Ensuring Longevity in Airport Sound Insulation Programs	2014

CHILDREN, YOUTH AND FAMILIES	**Year**
Parenting Matters: Supporting Parents of Children Ages 0-8	2016
Summertime Opportunities to Promote Healthy Child and Adolescent Development: Proceedings of a Workshopâ€"in Brief	2016
Moving from Evidence to Implementation of Early Childhood Programs: Proceedings of a Workshopâ€"in Brief	2016
Investing in Young Children for Peaceful Societies: Proceedings of a Joint Workshop	2016
Advancing the Power of Economic Evidence to Inform Investments in Children, Youth, and Families	2016
Reaching and Investing in Children at the Margins: Summary of a Joint Workshop	2016
Innovations in Design and Utilization of Measurement Systems to Promote Children's Cognitive, Affective, and Behavioral Health: Workshop in Brief	2016
Supporting Family and Community Investments in Young Children Globally: Summary of a Joint Workshop by the National Academies of Sciences, Engineering, and Medicine and the Ethiopian Academy of Sciences	2016
Opportunities to Promote Children's Behavioral Health: Health Care Reform and Beyond: Workshop Summary	2015
Supporting Family and Community Investments in Young Children Globally: Workshop in Brief	2015
Professional Learning for the Care and Education Workforce	2015
Strategies for Scaling Tested and Effective Family-Focused Preventive Interventions to Promote Children's Cognitive, Affective, and Behavioral Health: Workshop in Brief	2015
Harvesting the Scientific Investment in Prevention Science to Promote Children's Cognitive, Affective, and Behavioral Health: Workshop in Brief	2015
Investing in the Health and Well-Being of Young Adults	2015

Harvesting the Scientific Investment in Prevention Science to Promote Children's Cognitive, Affective, and Behavioral Health: Workshop Summary 2015

Strategies for Scaling Effective Family-Focused Preventive Interventions to Promote Children's Cognitive, Affective, and Behavioral Health: Workshop Summary 2014

The National Children's Study 2014: An Assessment 2014

CONFLICT AND SECURITY

Effects of the Deletion of Chemical Agent Washout on Operations at the Blue Grass Chemical Agent Destruction Pilot Plant 2016

The Neglected Dimension of Global Security: A Framework to Counter Infectious Disease Crises 2016

Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants: Phase 2 2016

Reducing the Use of Highly Enriched Uranium in Civilian Research Reactors 2016

Strategies to Enhance Air Force Communication with Internal and External Audiences: A Workshop Report 2016

Review Criteria for Successful Treatment of Hydrolysate at the Blue Grass Chemical Agent Destruction Pilot Plant 2015

Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery 2015

Application of Modern Toxicology Approaches for Predicting Acute Toxicity for Chemical Defense 2015

Regional Disaster Response Coordination to Support Health Outcomes: Summary of a Workshop Series 2015

Diplomacy for the 21st Century: Embedding a Culture of Science and Technology Throughout the Department of State 2015

Summary: Diplomacy for the 21st Century: Embedding a Culture of Science and Technology Throughout the Department of State 2015

Enabling Rapid and Sustainable Public Health Research During Disasters: Summary of a Joint Workshop by the Institute of Medicine and the U.S. Department of Health and Human Services 2015

Review Criteria for Successful Treatment of Hydrolysate at the Pueblo Chemical Agent Destruction Pilot Plant 2015

Developing a Framework for Measuring Community Resilience: Summary of a Workshop 2015

Regional Disaster Response Coordination to Support Health Outcomes: Surge Management: Workshop in Brief 2015

A Review of the U.S. Navy Cyber Defense Capabilities: Abbreviated Version of a Classified Report 2015

U.S. Air Force Strategic Deterrence Analytic Capabilities: An Assessment of Tools, Methods, and Approaches for the 21st Century Security Environment 2014

India-United States Cooperation on Science and Technology for Countering Terrorism: Summary of a Workshop 2014

The Science of Responding to a Nuclear Reactor Accident: Summary of a Symposium	2014
Research Priorities to Inform Public Health and Medical Practice for Ebola Virus Disease: Workshop in Brief	2014
Regional Disaster Response Coordination to Support Health Outcomes: Information Sharing and Incident Management: Workshop in Brief	2014
Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants	2014
Safe Science: Promoting a Culture of Safety in Academic Chemical Research	2014
The Influence of Global Environmental Change on Infectious Disease Dynamics: Workshop Summary	2014
An All-of-Government Approach to Increase Resilience for International Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Events: A Workshop Summary	2014
Strategic Engagement in Global S&T: Opportunities for Defense Research	2014
Regional Disaster Response Coordination to Support Health Outcomes: Community Planning and Engagement: Workshop in Brief	2014
Summary: Emerging and Readily Available Technologies and National Security: A Framework for Addressing Ethical, Legal, and Societal Issues	2014
Microbial Ecology in States of Health and Disease: Workshop Summary	2014

TAB G: Illustrative Example of Cross-Academies Work

COMMITTEE TO ADVISE THE U.S. GLOBAL CHANGE RESEARCH PROGRAM

An Activity of the National Academies of Sciences, Engineering, and Medicine

This standing committee provides ongoing and focused advice to the U.S. Global Change Research Program (USGCRP). The committee is broadly constituted to bring expertise in all the areas addressed by the USGCRP and is supported by the expertise of many units across the National Academies. The committee convenes key thought leaders and decision makers at semiannual meetings, provides strategic advice and reviews, and supports climate communication activities across the Academies.

CONVENING KEY THOUGHT LEADERS AND DECISION MAKERS

The committee provides a forum for interaction between the USGCRP and the scientific community through its in-person and virtual meetings. These meetings provide an opportunity for USGCRP leadership and agency representatives to discuss issues of importance with the global change research community, to exchange experience and insights for integrating across science communities, to plan for the USGCRP's international activities, to discuss planning and priorities for the Program, and to hear about global change activities underway throughout the National Academies.

DISCUSSION FORUMS AT RECENT MEETINGS:

- Research Needs for Vulnerability Assessment
- International Engagement of the USGCRP
- Integrating Social, Behavioral, Economic sciences into the USGCRP
- Performance Metrics for the USGCRP
- Improved Decision Support for Adaptation and Mitigation

Next meeting: April 20-21, 2017, Washington, DC

STRATEGIC ADVICE AND REVIEWS

The committee produces reports offering strategic advice and reviews for the USGCRP. In particular, the committee is tasked to provide formal reviews of USGCRP's strategic plans and the National Climate Assessments. It also provides formal advice on other topics that address issues spanning the full Program. For narrower topics, separate ad hoc committees are appointed with expertise relevant to the task as well as some overlapping membership with the Advisory Committee.

RECENT COMMITTEE AND PANEL REPORTS:

- *Review of the USGCRP's Draft Strategic Plan* (2012)
- *Review of the Draft 2013 National Climate Assessment* (2013)
- *Review of the Draft Interagency Report on the Impacts of Climate Change on Human Health in the United States* (2015)
- *Review of the USGCRP's Update to the Strategic Plan Document* (2016)
- *Enhancing Participation in the USGCRP* (2016)
- *Characterizing Risk in Climate Change Assessments: Proceedings of a Workshop* (2016)

Studies in progress:

- **Accomplishments of the USGCRP** (expected winter 2017)
- **Review of the Climate Science Special Report** (expected spring 2017)
- **Review of the Second State of the Carbon Cycle Report (SOCCR2)** (expected summer 2017)

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CONNECTING AND COMMUNICATING

The committee serves as an entry point to the vast array of expertise offered by the National Academies. To ensure communication and coordination, several Committee members serve on other Boards across the institution with related expertise. Additionally, the committee staff coordinates the Climate Change at the National Academies newsletter and web presence, including a website and social media presence. These tools are used for soliciting nominations for committee membership, announcing public meetings and events, and posting the committee's reports and other relevant content. Material for this initiative is pulled from across the institution, including much work relevant to the USGCRP goals.

WHERE TO FIND US:

For notice of upcoming meetings, sign up for the *Climate Change at the National Academies* newsletter at:

http://nas.edu/climate

Follow us on social media:

@NASEM_Climate

@NASEMclimate

COMMITTEE MEMBERSHIP

The committee consists of approximately 20 members with expertise spanning climate variability and change, human contributions and responses to global change, and decision support, as well as many other related physical and social science areas to support their work. Committee members are appointed for 3-year terms, with the option for reappointment for an additional 3 years. Approximately a third of the members are rotated every other year.

CURRENT MEMBERSHIP AND STAFF:

Warren Washington (Chair), National Center for Atmospheric Research

Kai Lee (Vice Chair), The David and Lucile Packard Foundation

Doug Arent, National Renewable Energy Laboratory

Susan Avery, Woods Hole Oceanographic Institute

Arrietta Chakos, Urban Resilience Strategies

Peter Daszak, EcoHealth Alliance

Thomas Dietz, Michigan State University

Kristie Lee Ebi, University of Washington

Baruch Fischhoff, Carnegie Mellon University

Nancy B. Grimm, Arizona State University

Henry Jacoby, Massachusetts Institute of Technology

Anthony C. Janetos, Boston University

Jerry Melillo, Marine Biological Laboratory

Richard H. Moss, University of Maryland

Ian Roy Noble, ND-GAIN

Margo Oge, Author and Former Director of the Office of Transportation and Air Quality at EPA

Kathleen Segerson, University of Connecticut

Kathleen Tierney, University of Colorado at Boulder

Charles J. Vorosmarty, City University of New York

Brian Zuckerman, IDA Science and Technology Policy Institute

STAFF

Amanda Purcell, Associate Program Officer, Board on Atmospheric Sciences and Climate

Amanda Staudt, Director, Board on Atmospheric Sciences and Climate

Paul C. Stern, Senior Scholar, Board on Environmental Change and Society

QUESTIONS?

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TAB H: Travel Information

The National Academies of
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Environmental Health Work Planning Meeting

MEETING INFORMATION

National Academy of Sciences Keck Center
Room 208
500 5th Street, NW
Washington, DC 20001

You will need to show a photo ID and check in at the guard's desk when you enter the building.

HOTEL INFORMATION

Hyatt Regency Capitol Hill
400 New Jersey Avenue, NW
Washington, DC 20001
202-737-1234

Your hotel stay will be directly billed to the Academies and guaranteed for late arrival. You will be responsible for any incidentals.

HOTEL CONFIRMATION NUMBERS

Last Name	First Name	Arrival Date	Dep. Date	Confirmation Number
Breysse	Patrick	02/09/2017	02/10/2017	35432240
Burke	Thomas	02/09/2017	02/10/2017	35291666
Crites	Jim	02/09/2017	02/10/2017	35291725
Dyjack	Dave	02/09/2017	02/10/2017	35291768
Farland	Bill	02/08/2017	02/10/2017	35291946
Haas	Chuck	02/09/2017	02/10/2017	35292251
McCauley	Linda	02/09/2017	02/10/2017	35292308
McEwen	Bruce	02/09/2017	02/10/2017	35432298
Samet	Jon	02/09/2017	02/10/2017	35292361
Thigpen-Tart	Kimberly	02/09/2017	02/10/2017	35293241
Yohe	Gary	02/09/2017	02/11/2017	35293124
Zeise	Lauren	02/09/2017	02/11/2017	35432154

TRAVEL INFORMATION

Flight Issues: Contact Kentlands at 800-552-6425 or at their after-hours number 888-565-9184. You may also contact Aanika at (240) 466-2899.

Transportation:

You may use taxis/Ubers to travel from the hotel to Keck and from Keck to the hotel.

Metro

BY METRO'S RED LINE
1. Take Metro's Red Line to the Judiciary Square station.
2. Exit the station by following signs to the Building Museum (F Street) exit, between Fourth and Fifth Streets N.W.
3. Turn LEFT and walk WEST on F Street N.W.
4. Cross Fifth Street N.W. and turn LEFT.
5. Walk past the fire station parking lot. The next building on your right will be 500 Fifth St. N.W.

BY METRO'S GREEN OR YELLOW LINE
1. Take Metro's Green or Yellow Line to the Gallery Place-Chinatown station.
2. Exit the station by following signs to Seventh and F Streets/Arena.
3. Turn LEFT and walk EAST on F Street N.W., two blocks past the Verizon Center.
4. Turn RIGHT on to Fifth Street N.W.
5. Walk past the fire station parking lot. The next building on your right will be 500 Fifth St. N.W.

TRANSPORTATION EXPENSES

Transportation costs to and from the airport and the meeting can be reimbursed. Please save your receipts from any and all methods of transportation. Rental cars/luxury sedan services *are not* reimbursable by the Academies. Please *do not* use limo services as they tend to be more expensive than taxis and will only be reimbursed for the amount it would cost for regular taxi service.

PER DIEM EXPENSES

NAS must comply with federal per diem rates, and for this activity, NIH-specific rules. The National Academies reimburses actual expenses up to per diem rates. The per diem rate for meals and incidental expenses for non-local travelers is $69.00 for non-travel days and ¾ or $51 for days you are traveling. To comply with NIH rules, we need you to purchase your meals (including dinner) coffee and snacks and request reimbursement. Alcohol expenses will not be reimbursed. Travelers are eligible for expense reimbursement beginning the date of your arrival and ending on the date of your departure to your home, office, or other authorized location. I will contact everyone after the meeting to request a list of all expenses incurred related to the meeting. To ensure that you receive your reimbursement as quickly as possible, expense reports are due within two weeks of your arrival after a meeting has taken place. You can expect reimbursement in approximately 4-6 weeks. Contact Aanika Senn with any questions at 202-334-3947 or e-mail asenn@nas.edu.