



HHS Climate Justice Conference:

Responding to Emerging Health Effects

June 8-9, 2015

Research Triangle Park, North Carolina

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2015 HHS Climate Justice Conference: Responding to Emerging Health Effects

U.S. Department of Health and Human Services
National Institute of Environmental Health Sciences

111 T.W. ALEXANDER DRIVE, BUILDING 101 • RESEARCH TRIANGLE PARK, NORTH CAROLINA

JUNE 8-9, 2015

AGENDA

MONDAY, JUNE 8, 2015

8:00 a.m. **Registration** *Building 101, Lobby*

8:30–8:45 a.m. **Informal Networking**

8:45–9:00 a.m. **Welcome** *Rodbell ABC*

- Gwen Collman, Director, Division of Extramural Research and Training, National Institute of Environmental Health Sciences (NIEHS)
- Sandra Howard, Office of the Assistant Secretary for Health (OASH), U.S. Department of Health and Human Services
- Chip Hughes, Worker Training Program (WTP), NIEHS

9:00–9:30 a.m. **Keynote Speakers**

- Wanda Jones, Principal Deputy Assistant Secretary for Health, HHS
- John Balbus, Senior Advisor for Public Health, NIEHS

9:30–10:30 a.m. **Panel Presentation and Discussion**

TOPIC: Stakeholder Panel on Climate Justice Priorities

MODERATOR: Chip Hughes, NIEHS

PANEL:

- Jalonne White-Newsome, West Harlem Environmental Action, Inc. (WE ACT for Environmental Justice)
- Sacoby Wilson, University of Maryland
- Arturo Archila, Make the Road New York
- Naeem Muhammad, North Carolina Environmental Justice Network
- Tom Hatley, Catalpa Institute

10:30–10:45 a.m. **Break**

10:45–11:45 a.m. **Panel Presentation and Discussion**.....Rodbell ABC

TOPIC: Federal Agency Initiatives on Climate Justice

MODERATOR: Mustafa Ali, Senior Advisor to the Administrator for Environmental Justice, U.S. Environmental Protection Agency (EPA)

PANEL:

- Sandra Howard, OASH, HHS
- Dylan de Kervor, Civil Rights Division, U.S. Department of Justice (DOJ)
- Sunaree Marshall, Office of Economic Resilience, U.S. Department of Housing and Urban Development (HUD)
- Joanna Watson, National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC)
- Cynthia Peurifoy, EPA Region 4

11:45 a.m.–12: 45 p.m. **Climate Data and Tools Overview**

TOPIC: HHS Activities, Resources, and Tools

- John Balbus, NIEHS
- George Luber, CDC

12:45–1:00 p.m. **Charge to the Breakout Groups and Climate Resilience Toolkit Exploration Sessions**

- Chip Hughes, NIEHS

1:00–1:45 p.m. **Lunch on Your Own**.....Cafeteria

1:45–2:45 p.m. **Concurrent Sessions**

1:45–2:15 p.m. **Climate Resilience Toolkit Exploration—Session A**A012 Computer Lab

*Please sign up at the registration desk for one of the four session times.
Space limited to 24 people.*

LEAD: Mark Shimamoto, U.S. Global Change Research Program (USGCRP)

1:45–2:45 p.m. **Breakout Groups**

1) Policy Development and DisseminationRodbell B

POSSIBLE TOPICS:

- a. HHS climate change priorities for 2015 and 2016
- b. Emergency preparedness and response mechanisms to address climate change impacts
- c. Building Resilience Against Climate Effects (BRACE) framework

CO-FACILITATORS

FEDERAL: Lorenzo Olivas, OASH Region 8 and George Luber, CDC

STAKEHOLDER: Jalonne White-Newsome, WE ACT for Environmental Justice

REPORT BACK: Kimberly Thigpen Tart, NIEHS

2) Education and TrainingExecutive Conference Room

POSSIBLE TOPICS:

- a. Worker training, safety and health
- b. Emergency preparedness and response training
- c. Community resilience training

CO-FACILITATORS

FEDERAL: Sharon Beard, NIEHS and Joanna Watson, NIOSH

STAKEHOLDER: Mark Catlin, Service Employees International Union (SEIU)

REPORT BACK: Ron Milam, OASH

3) Research and Data Collection, Analysis, and UtilizationRodbell A

POSSIBLE TOPICS:

- a. Asthma and air quality impacts
- b. Water access and quality
- c. Citizen science (empowerment, skill building, and competence)
- d. Mental health and sociological perspectives
- e. Native American health issues

CO-FACILITATORS

FEDERAL: Liam O’Fallon and Caroline Dilworth, NIEHS

STAKEHOLDER: Sacoby Wilson, University of Maryland and Omega Wilson, West End Revitalization Association, Inc. (WERA)

REPORT BACK: Symma Finn, NIEHS

4) Services Rodbell C

POSSIBLE TOPICS:

- a. Climate Data and Tools Initiative
- b. Sustainable and Climate Resilient Healthcare Facilities Initiative
- c. Community resilience
- d. Private sector approaches to health and vulnerability

CO-FACILITATORS

FEDERAL: Sharon Ricks, OASH Region 4 and John Balbus, NIEHS

STAKEHOLDER: Tanya Maslak, National Association of County and City Health Officials (NACCHO)

REPORT BACK: Kedesch Altidor-Dorcély, OASH Region 2

2:15–2:45 p.m. **Climate Resilience Toolkit Exploration—Session B**A012 Computer Lab

*Please sign up at the registration desk for one of the four session times.
Space limited to 24 people.*

LEAD: Mark Shimamoto, U.S. Global Change Research Program (USGCRP)

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| 2:45–3:00 p.m. | Optional Break |
| 3:00–4:30 p.m. | Concurrent Sessions (continued) |
| 3:00–3:30 p.m. | Climate Resilience Toolkit Exploration—Session CA012 Computer Lab <i>Please sign up at the registration desk for one of the four session times. Space limited to 24 people.</i> LEAD: Mark Shimamoto, U.S. Global Change Research Program (USGCRP) |
| 3:00–4:30 p.m. | Breakout Groups (continued) |
| 3:30–4:00 p.m. | Climate Resilience Toolkit Exploration—Session DA012 Computer Lab <i>Please sign up at the registration desk for one of the four session times. Space limited to 24 people.</i> LEAD: Mark Shimamoto, U.S. Global Change Research Program (USGCRP) |

TUESDAY, JUNE 9, 2015

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| 8:00 a.m. | Registration Building 101, Lobby |
| 9:00–9:30 a.m. | Keynote Rodbell ABC <ul style="list-style-type: none"> Elizabeth Yeampierre, Executive Director, UPROSE |
| 9:30–11:15 a.m. | Report Back from Breakout Groups and Climate Tools Exploration Sessions and Open Discussion MODERATORS: Sandra Howard, OASH, Chip Hughes, NIEHS, and John Balbus, NIEHS 9:35 a.m.— Policy Development and Dissemination (Kimberly Thigpen Tart, NIEHS) 10:00 a.m.— Education and Training (Ron Milam, OASH) 10:25 a.m.— Research and Data Collection, Analysis, and Utilization (Symma Finn, NIEHS) 10:50 a.m.— Services (Kedesch Altidor-Dorcely, OASH) |
| 11:15–11:45 a.m. | Closing/ Next Steps <ul style="list-style-type: none"> Sandra Howard, OASH, and Chip Hughes, NIEHS |

Speaker Bios

Mustafa Ali, *Environmental Protection Agency*

Mustafa Santiago Ali has been a National Speaker, Trainer, and Facilitator on Social Justice Issues for over 20 years with a specific focus on the issue of Environmental Justice, Sustainability, and Community Revitalization. During that time Mustafa has given over 1,000 presentations, facilitations, and trainings. He has also worked with over 500 communities on both the domestic and international front to secure environmental, health and economic justice.

Mustafa is a founding member of the Office of Environmental Justice (OEJ) and has played a major role in the design and implementation of many of EPA's most successful programs focused on environmental justice and community revitalization. He currently serves as the Acting Senior Advisor to the Administrator for Environmental Justice. In this role Mustafa helps to elevate EJ issues to the highest levels of the Agency and works across programs to integrate and strengthen all of EPA's EJ initiatives. Mustafa's work promotes meaningful, working relationships with EJ communities, as well as builds strong partnerships to address some of the country's most persistent environmental challenges.

Mustafa is the former Associate Director in the U. S. Environmental Protection Agency's Office of Environmental Justice where he led the Communication and Stakeholder Involvement (CSI) team. In 2012, Mustafa created and produced the Environmental Justice in Action Blog which currently has over 100,000 followers. The blog highlights innovative actions to address environmental justice, sustainability, and climate change issues. Mr. Ali served as the Environmental Justice lead in 2010 for the BP Deepwater Horizon oil spill. Additionally, in 2009 he served as the Designated Federal Official for the Workgroup on Nationally Consistent EJ Screening Approaches of the National Environmental Justice Advisory Council (NEJAC), a federal advisory committee to the U.S. EPA.

Mustafa was a Brookings Institution Congressional Fellow in the Office of Congressman John Conyers during Fiscal Year 2007-08. His portfolio as a Legislative Assistant focused on Foreign Policy in Africa and South America, Homeland Security, Health Care, Veterans Affairs, Appropriations and Environmental Justice.

In 2004, he was selected as the National Enforcement Training Institutes "Trainer of the Year." During that time he led the effort with other members of the EJ Training Collaborative to train approximately 4,000 stake-holders across the country in "The Fundamentals of Environmental Justice Workshop."

Mr. Ali is a former instructor at West Virginia University and Stanford University in Washington. He has guest lectured at universities and colleges across the country including, Yale University, George Washington University, Georgetown University, Spelman College, Albany Law School and Howard University School of Law. In addition to lecturing at academic institutions, Mr. Ali has presented on Capitol Hill and for the White House office of Public Engagement. He is the former Co-host of the "Spirit in Action" radio show which focused on social justice issues.

Arturo Archila, Make the Road New York

Arturo Archila is an Educator & Job Placement Specialist with Make the Road New York, a non-profit community organization in New York City working with Latino and working class communities to achieve dignity and justice through organizing, policy innovation, transformative education, and survival services.

John Balbus, National Institute of Environmental Health Sciences

John M. Balbus, M.D., is a senior advisor to the NIEHS Director on public health issues and director of the NIEHS Global Environmental Health program. In this role, he serves as NIEHS liaison to its external constituencies, stakeholders, and advocacy groups. 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. He was among the lead authors of the health chapter of the Third National Climate Assessment and was a review editor for the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment report. His 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.

Gwen Collman, National Institute of Environmental Health Sciences

Gwen Collman, Ph.D., is director of the NIEHS Division of Extramural Research and Training where she leads approximately 60 professional staff in areas of scientific program administration, peer review, and the management and administration of about 1,500 active grants each year. She directs scientific activities across the field of environmental health sciences including basic sciences (i.e., DNA repair, epigenetics, environmental genomics), organ-specific toxicology (i.e., reproductive, neurotoxicology, respiratory), public health related programs (i.e., environmental epidemiology, environmental public health), and training and career development. She also oversees the implementation of the Superfund Research Program and the Worker Education and Training Program.

Prior to her current role, Collman served in program development and management, beginning in 1992 as a member, then as Chief of the Susceptibility and Population Health Branch. During this time, she directed research on the role of genetic and environmental factors on the development of human disease, from animal models of genetic susceptibility to population studies focusing on etiology and intervention. She was responsible for building the NIEHS grant portfolio in environmental and molecular epidemiology, and developed several complex multidisciplinary research programs. These include the NIEHS Breast Cancer and the Environment Research Centers Program, the NIEHS/EPA Centers for Children's Environmental Health and Disease Prevention, and the Genes, Environment and Health Initiative. Also, under her guidance, a team created a vision for the Partnerships for Environmental Public Health programs for the next decade.

Dylan Nicole de Kervor, US Department of Justice

Dylan Nicole de Kervor, Esq., M.S.W., is an Attorney with the Federal Coordination and Compliance Section (FCS) of the U.S. Department of Justice, Civil Rights Division. FCS ensures that all federal agencies

consistently and effectively enforce civil rights statutes and Executive Orders that prohibit discrimination in federally conducted and assisted programs and activities.

Ms. de Kervor's portfolio includes policy and enforcement efforts related to Title VI of the Civil Rights Act of 1964, including environmental justice matters, and she currently chairs the Title VI sub-committee of the Federal Environmental Justice Interagency Working Group. Prior to joining FCS, Ms. de Kervor was a Civil Rights Analyst with the U.S. Department of Health and Human Services, Office for Civil Rights (OCR), where she served as a lead staff member for the office's environmental justice engagements.

Ms. de Kervor received her J.D. and M.S.W. from the University of California, Berkeley and her B.A. in Urban Studies and Planning from the University of California, San Diego. She is a member of the State Bar of California.

Tom Hatley, Catalpa Institute

Dr. Tom Hatley is a Principal at the Catalpa Institute, formerly was the Sequoyah Distinguished Professor in Cherokee Studies at Western Carolina University, and has directed regional and multi-state NGOs. Trained as a colonial historian and forester, he has written on issues of forestland equity in Southern Changes and co-written an early influential book about management in the face of inadequate information and understanding, Uncertainty on a Himalayan Scale, recently reissued by the James Martin 21st Century School at Oxford, The International Institute for Applied Systems Analysis, and Himal Press in Kathmandu. In the early 1990s he co-led a conflict-resolution process between struggling upstate rural communities and the City of NY which led to a landmark "ecosystem services" agreement for reinvesting in watershed management and rural economies. At the Catalpa Institute, he designs collaborative initiatives, cross-cultural dialogue, and economic and cultural asset building strategies in areas such as food sovereignty, forest management, and social enterprise businesses.

Sandra Howard, U.S. Department of Health and Human Services

Sandra N. Howard is the Senior Environmental Health Advisor in the Office of the Assistant Secretary for Health (OASH), U.S. Department of Health and Human Services (HHS). She co-chairs the HHS Environmental Justice Working Group and represents HHS on the Environmental Justice Federal Interagency Working Group. She also co-chairs the Senior Staff Steering Committee of the President's Task Force on Environmental Health Risks and Safety Risks to Children.

Ms. Howard has over 30 years of experience in the development and coordination of Federal science policy. Prior to joining OASH, she was the senior policy analyst in HHS's Office of Science and Data Policy. She served as the lead analyst for policy issues related to biomedical research and environmental health. She began her career at the National Institutes of Health (NIH), holding positions in budget, legislation and other policy and administrative areas. From there, she went to work for the Appropriations Committee of the U.S. House of Representatives. She later returned to NIH to help establish the Office of Minority Programs (now the National Institute on Minority Health and Health Disparities).

Ms. Howard is a graduate of Yale College. Her academic background is in medical anthropology and public health.

Joseph “Chip” Hughes, *National Institute of Environmental Health Sciences*

Chip Hughes, M.P.H., is currently director of an innovative federal safety and health training program based at the National Institute of Environmental Health Sciences. The program supports cooperative agreements to develop and deliver model safety and health training programs for workers involved in hazardous substances response with numerous universities, unions, community colleges and other non-profit organizations throughout the nation. For the past twenty years, Mr. Hughes has worked in both the private and public sectors in developing environmental and occupational health education programs for workers and citizens in high-risk occupations and communities. As a part of this work, he has pioneered efforts to create new methods and approaches for conducting needs assessments, reaching underserved populations, developing training partnerships and creating innovative program evaluation and assessment measures.

Under Mr. Hughes’ leadership, NIEHS grant support of \$40 million is annually committed for the development and administration of model worker health and safety training programs consisting of classroom, hands-on, on-line, computer-based and practical health and safety training of workers and their supervisors, who are engaged in activities related to hazardous materials and emergency response.

Wanda K. Jones, *U.S. Department of Health and Human Services*

Wanda K. Jones, Dr.P.H., is the Principal Deputy Assistant Secretary for Health in the U.S. Department of Health and Human Services. She was appointed to the position in November 2009.

The Office of the Assistant Secretary for Health is charged with leadership in developing policy recommendations as they pertain to public health issues that cut across HHS agencies and operating divisions. Dr. Jones actively participates in the Department’s efforts on global health, climate change, Healthy People 2020 and a range of other issues.

Dr. Jones has long been recognized for her leadership in the federal and state public health communities. From February 1998 until December 2009, Dr. Jones was the Deputy Assistant Secretary for Health (Women’s Health) and the Director of the Office on Women’s Health. In that capacity, she emphasized the elimination of health disparities, addressing HIV/AIDS, supporting women with disabilities and helping women have better access to health care services and programs. During that same time, the HHS Coordinating Committee on Women’s Health, led by Dr. Jones, supported initiatives to address women’s health issues such as cardiovascular disease, diabetes and obesity, lupus, breastfeeding and mental health.

Dr. Jones joined the Centers for Disease Control and Prevention (CDC) in 1987 as an HIV laboratory trainer. In 1990, she became the Assistant Director for Science in the Office of the Associate Director for HIV/AIDS, where she was active in policy issues related to HIV laboratory testing, women and AIDS, HIV vaccine development and health care workers. Prior to coming to HHS, she served as the Associate Director for the CDC’s Office of Women’s Health.

A Penn State graduate in medical technology, she has worked in the blood bank and hematology laboratories of an inner-city hospital; in a small town hospital as its night shift technologist and then as

its microbiologist; and for a state public health laboratory as a laboratory improvement consultant. She received her doctorate in Public Health Laboratory Practice from the University of North Carolina at Chapel Hill.

George E. Luber, Centers for Disease Control and Prevention

George E. Luber, Ph.D., is an epidemiologist and the Chief of the Climate and Health Program in the Division of Environmental Hazards and Health Effects at the National Center for Environmental Health, Centers for Disease Control and Prevention.

Since receiving his PhD in Medical Anthropology from the University of Georgia, and joining CDC in 2002, Dr. Luber has served as an Epidemic Intelligence Service (EIS) Officer and staff epidemiologist at the National Center for Environmental Health. His research interests in Environmental Health are broad and include the health impacts of environmental change and biodiversity loss, harmful algal blooms, and the health effects of climate change. Most recently, his work has focused on the epidemiology and prevention of heat-related illness and death, the application of remote sensing techniques to modeling vulnerability to heat stress in urban environments, and Climate Change adaptation planning.

In addition to managing the Climate Change Program at CDC, Dr. Luber is a Co-Chair of the Climate Change and Human Health Interagency Workgroup at the US Global Change Research Program, a Convening Lead Author for the US National Climate Assessment, a member of the American Anthropological Association's Presidential Task Force on Climate Change, and a lead author for the Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report. He is also Adjunct Professor in the Departments of Environmental Health, Anthropology, and Environmental Science at Emory University.

Sunaree Marshall, Department of Housing and Urban Development

Sunaree Marshall is a Senior Policy Advisor in the U.S. Department of Housing and Urban Development's Office of Economic Resilience. She has spent the past five years guiding cities, neighborhoods, and regions on how to set more sustainable, inclusive visions for their communities through HUD's Sustainable Communities Initiative.

Sunaree also coordinates HUD's work on resilience and environmental justice, through the HUD Resilience Council, HUD's Environmental Justice Strategy, and the HUD-DOT-EPA Partnership for Sustainable Communities. Sunaree began at HUD through the Presidential Management Fellowship program, through which she also worked with the White House Initiative on Asian Americans and Pacific Islanders on sustainable neighborhoods, public-private partnerships, and Native Hawaiian and Pacific Islander issues.

Sunaree received a B.A. in Architecture and B.S. in Civil Engineering from the University of California at Berkeley and a Masters in City Planning from MIT. She previously served as a Community Youth Development Peace Corps Volunteer in Ulaanbaatar, Mongolia.

Naeema Muhammad, North Carolina Environmental Justice Network

Naeema Muhammad is co-director/community organizer of the North Carolina Environmental Justice Network. She has worked on two NIEHS funded grants. The first was Community Health and Environmental Reawakening (CHER) in which she served as a community organizer working with communities dealing with waste from industrial hog operations. In this position she worked with Steve Wing, from the UNC Chapel Hill School of Public Health and was supervised by Gary R. Grant, executive director of the Concerned Citizens of Tillery. She has co-authored publications with Wing regarding community based participatory research.

Muhammad also worked on the Community Health Effects of Industrial Hog Operations (CHEIHO) project in which she has served as a community organizer, environmental justice educator, interviewer, and participant in qualitative data analysis. Muhammad's past primary responsibilities on the proposed project was to work in collaboration with Amy Lowman, CHEIHO project manager, in all aspects of data collection.

Muhammad is also a founding member of Black Workers for Justice (BWFJ) in North Carolina. It is a community-based organization that addresses workers' rights issues at the workplace since 1981.

Cynthia B. Peurifoy, U.S. Environmental Protection Agency

Cynthia Peurifoy serves as the Regional Environmental Justice Coordinator at the U.S. Environmental Protection Agency Region 4 Office in Atlanta, GA. In this capacity, Cynthia built lasting relationships with many Environmental Justice stakeholders in Region 4, and worked to create an atmosphere of engagement, respect, and collaboration around environmental justice issues in the Region. Ms. Peurifoy provides advice and guidance to regional management and staff, as well as host of external stakeholders in an effort to address environmental justice concerns as they arise.

Cynthia's career with EPA spans nearly 40 years. Cynthia has worked in various positions and program areas, including coordinating the Regional Response Team, working with the Community Right -To-Know Program, and working in the Office of Civil Rights. Other previous primary responsibilities include coordinating EPA's efforts in support of the Charleston/North Charleston Community-Based Environmental Protection Project. Prior to taking this position, Cynthia served as a Community Involvement Coordinator in the Waste Management Division at EPA. Ms. Peurifoy has been a key player in the ReGenesis Environmental Justice Partnership.

Cynthia is a Life Member of Blacks in Government, as well as the 1998 recipient of the Superfund Community Involvement Coordinator of the Year Award and two other National Notable Achievement Awards. Cynthia was the recipient of the Region's Diversity Awareness Award in 2008. Cynthia has also served as the Region's Black Employment Program Manager. In April 2010, she received the "Women Rebuilding Communities & Ensuring a Sustainable Planet Award" from the Nu Lambda Omega Chapter of Alpha Kappa Alpha, Sorority, Inc. She also received EPA's National Collaborative Problem Solving Award for her work in Spartanburg, SC in 2010. In August 2014, the ReGenesis Board in Spartanburg, SC presented Ms. Peurifoy with the "South Carolina Grass Roots Advocacy for Environmental and Economic Justice" award. This award will be given every year in the future in her honor. Finally, in October 2014,

the Florida Brownfields Association presented an Environmental Justice Champion's Award to Ms. Peurifoy for her role in supporting environmental justice efforts in Florida.

Joanna Watson, National Institute for Occupational Safety and Health

Joanna Watson, M.Sc., D.Phil., is an Epidemiologist with the National Institute for Occupational Safety and Health (NIOSH) Western States Division. Joanna joined NIOSH in August 2014 and is based in Anchorage, Alaska. Since joining NIOSH she has been actively involved in NIOSH activities relating to the impact of climate change on the safety and health of workers. Through her role in the recently established NIOSH Climate Change Initiative, Joanna continues to be involved in the development of an agency wide strategy and research agenda to ensure that current, emerging, and anticipated worker safety and health issues associated with climate change are appropriately identified and prioritized. Her role also includes participating in interagency initiatives to ensure occupational safety and health is included as a core component of climate justice activities, and collaborating with relevant community members and stakeholders to develop recommendations and interventions for protecting vulnerable worker populations.

Prior to joining NIOSH, Joanna was a CDC Epidemic Intelligence Service Officer assigned to the Utah Department of Health. Joanna has a doctorate in cancer epidemiology from the University of Oxford and a masters in epidemiology from Imperial College London.

Jalonne White-Newsome, WE ACT for Environmental Justice

Jalonne L. White-Newsome, Ph.D., is the Director of Federal Policy for WE ACT for Environmental Justice's Washington DC based Legislative Office. In this capacity, she engages in advocacy and education on Capitol Hill, while monitoring Administrative actions, to ensure an environmental justice perspective is included in legislative and regulatory conversations on a variety of environmental issues. Jalonne coordinates a national coalition of environmental justice leaders called the Environmental Justice Leadership Forum on Climate Change (www.ejleadershipforum.org), and is also co-chair of the Urban Air Toxins Workgroup for the Environmental Protection Agency's Clean Air Act Advisory Committee (CAAAC). Prior to joining WE ACT, Jalonne was a post-doctoral climate and health research fellow with the Union of Concerned Scientist's Climate and Energy Program, and spent several years in various environmental roles in the private sector. She is an adjunct professor at the George Washington University in Washington DC, and Kettering University in Flint, Michigan. A proud native Detroit, Jalonne holds a bachelor's degree in chemical engineering from Northwestern University and a master's degree in Environmental Engineering from Southern Methodist University, and a PhD in Environmental Health Sciences from the University of Michigan School of Public Health.

Sacoby Wilson, University of Maryland

Sacoby Wilson, Ph.D., works as an Assistant Professor at Maryland Institute for Applied Environmental Health and Department of Epidemiology and Biostatistics, School of Public Health, University of Maryland-College Park. He has 15 years of experience performing environmental justice research, exposure science, community-based participatory research, and working on built environment issues, climate change, industrial animal production, air pollution, water quality problems, and environmental health disparities. For the past four years, he has been Director of the Community Engagement,

Environmental Justice and Health (CEEJH) Initiative. The mission of CEEJH is to study and address environmental injustice and environmental health disparities in the Washington, DC region and Southeastern United States. Through technical assistance, collaboration, and educational programs, communities are empowered to address environmental injustice and environmental health disparities. The CEEJH lab was founded by Dr. Wilson in Fall 2011 and is housed at the University of Maryland, College Park, Maryland Institute for Applied Environmental Health (MIAEH). CEEJH's primary focus is to engage highly and differentially exposed populations and underserved communities particularly disadvantaged populations of color. CEEJH's work has included the development of and participation in partnerships with community-based organizations, environmental advocacy groups, health practitioners, and policymakers (federal, state, and local government) to reduce local contamination, improve environmental quality, and enhance community health and sustainability. CEEJH acts to advance environmental justice and eliminate environmental health disparities by developing community-university partnerships, using the community-based participatory research (CBPR) approach, community-owned and managed research (COMR) principles, and the Collaborative-Problem Solving Model (CPSM) with a focus on equitable planning, healthy zoning, and sustainable community development. Currently, CEEJH has partnerships with community groups in North Carolina and South Carolina and has trained impacted residents and helped to become citizen scientists using the CBPR framework. CEEJH is building partnerships in Maryland with community-based organizations on exposure disparities for fishermen and residents in the Anacostia Watershed, air pollution issues in South Baltimore, environmental health disparities in DC, and industrial chicken farming on the Eastern Shore. In addition, he is working with schools in the region on pipeline development efforts in the STEMH disciplines (Science, Technology, Engineering, Mathematics, and Health).

He has worked on environmental justice and health issues with community-based organizations through community-university partnerships in South Carolina and North Carolina including the Low Country Alliance for Model Communities, in North Charleston, South Carolina; the West End Revitalization Association in Mebane, NC; and the Graniteville Community Coalition in Graniteville, SC. He has provided technical assistance to REACH in Duplin County, NC; RENA in Orange County, NC; and the NC Environmental Justice Network. Dr. Wilson is a past Chair of the APHA Environment Section, on the Board of Community-Campus Partnerships for Health (CCPH), a past member of the Board of Scientific Counselors for the CDC NCEH/ATSDR, and former Chair of the Alpha Goes Green Initiative, Alpha Phi Alpha Fraternity, Inc. He is also a senior fellow in the Environmental Leadership Program. Dr. Wilson, a two-time EPA STAR fellow, EPA MAI fellow, Udall Scholar, NASA Space Scholar, and Thurgood Marshall Scholar, received his BS degree in Biology/Ecotoxicology from Alabama A&M University, a Historically Black College and University (HBCU) located in Huntsville, AL in 1998. He received his M.S. degree in Environmental Health and PhD in Environmental Health from the Department of Environmental Sciences & Engineering, School of Public Health, UNC-Chapel Hill.

Dr. Wilson has received a number of awards for his community-engaged environmental justice research, service, and practice. He received the Steve Wing International Environmental Justice Award in 2008 and the USC Reverend Dr. Martin Luther King, Jr. Social Justice Award in 2009. He also received an EPA EJ Achievement Award with his community partners the Low Country Alliance for Model

Communities. He won the 2008 Steve Wing International Environmental Justice Award and USC Dr. Martin Luther King, Jr., Social Justice Award in 2011 because of his work addressing burden and exposure disparities in underserved and overburdened communities. At the UMD School of Public Health, he has won the Communitarian of the Year Award and the Practitioner of the Year Award.

Elizabeth C. Yeampierre, UPROSE

Elizabeth C. Yeampierre, Esq. is a nationally recognized Puerto Rican attorney and environmental justice leader of African and Indigenous ancestry, born and raised in New York City. She is Executive Director of UPROSE, Brooklyn's oldest Latino community based organization. Her award winning vision for an inter-generational, multi-cultural and community led organization is the driving force behind UPROSE. She is a long-time advocate and trailblazer for community organizing around just, sustainable development, environmental justice and community-led climate adaptation and community resiliency in Sunset Park. Prior to assuming the Executive Director position at UPROSE, Ms. Yeampierre was the Director of Legal Education and Training at the Puerto Rican Legal Defense Fund, Director of Legal Services for the American Indian law Alliance and Dean of Puerto Rican Student Affairs at Yale University.

Ms. Yeampierre's national leadership was formally recognized when she became the first Latina to chair the U.S. Environmental Protection Agency's National Environmental Justice Advisory Council (NEJAC). She worked diligently to ensure that environmental justice was incorporated into EPA rulemaking and integrated into all federal agencies. Her most recent effort led to the creation of a NEJAC workgroup dedicated to developing recommendations for resilience from storm surges for industrial waterfront communities. Ms. Yeampierre is also a member of the National Institute for Environmental Health Sciences Advisory Council. Elizabeth advocates for the authentic engagement and leadership of people of color in research in their own communities. In addition, after joining a group of national environmental justice leaders to brief the Obama transition team in 2008, Elizabeth was selected as the opening speaker at the first White House Forum on Environmental Justice.

Ms. Yeampierre's leadership in New York emerged when she was asked to be the Chair of the New York City Environmental Justice Alliance. As Chair, Ms. Yeampierre was part of the New York City environmental justice leadership responsible for getting New York State's first Brownfield legislation passed and NYC's Solid Waste Management Plan adopted. Ms. Yeampierre helped incorporate environmental justice into the State of New York Climate Adaptation and Integration Plan. She also served on Mayor Bloomberg's Long Term Planning and Sustainability Advisory Board, the NYS Regional Greenhouse Gas Initiative Advisory Board, and was a Commissioner on the historic NYS Traffic Congestion Mitigation Commission.

As a community leader, her work at UPROSE has facilitated an aggressive urban sustainability and environmental justice agenda. She created an urban forestry initiative and significantly contributed to the doubling of open space in Sunset Park. Just recently, the Sunset Park community celebrated the opening of a 23 acre waterfront park that UPROSE championed for over 15 years. Ms. Yeampierre developed a project that resulted in the retrofit and re-powering of 12 diesel trucks for a local business. Ms. Yeampierre successfully organized a community wide coalition and is credited for facilitating the local defeat of a 520 mega-watt power plant application. She has developed and implemented a

community participatory model that has resulted in a community led greenway-blueway design for Sunset Park's waterfront. Ms. Yeampierre's efforts have resulted in significant public investment in Sunset Park including \$8.4 million dollars for the greenway and waterfront park and an additional \$36 million dollars in Brownfield remediation funds for the waterfront park (the largest brownfield grant in the history of the State of New York). At UPROSE, Elizabeth secured \$1,000,000 for pollution reduction projects that are being shared and distributed throughout the community. Elizabeth Founded the NYC Climate Justice Youth Summit, a space where young people of color throughout the City come to learn how to engage their local communities in addressing climate change. Most recently, in response to the community's request after Super Storm Sandy, Elizabeth created the Climate Justice and Community Resiliency Center-NYC's first grassroots-led, bottom-up, climate adaptation and community resiliency planning project.

Ms. Yeampierre has been a featured speaker at local, national and international forums including Sage Paris 2015, White House Forum on Environmental Justice, Yale, Harvard, Cooper Union, Columbia, and universities, colleges and conferences all over the country. Her work is featured in several books, in addition to TIEMPO, Latina Magazine, Despierta America, and a variety of media outlets throughout the United States, Latin America and Europe.



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES | WASHINGTON, D.C.

POLICY DEVELOPMENT AND DISSEMINATION • EDUCATION AND TRAINING • RESEARCH AND DATA COLLECTION, ANALYSIS, AND UTILIZATION • SERVICES

PLAN-AT-A-GLANCE

2012 Environmental Justice Strategy and Implementation Plan

FEBRUARY 2012

Message from Secretary Kathleen Sebelius

Every American deserves to have a clean, safe and healthy environment. Today, we understand better than ever before that our health is not only dependent on what happens in the doctor's office but is determined by the air we breathe, the water we drink and the communities we call home. Over the past two years, the Administration and our agency have taken unprecedented steps to ensure strong protection from environmental and health hazards for all Americans.

There's nothing more important than health. When we live longer, healthier lives, we have more time to do our jobs, volunteer in our neighborhoods, play with our children, and watch our grandchildren grow up. Health is the foundation of our country's prosperity. Healthy adults are more productive workers, healthy children are better students and healthy families can make bigger contributions to their communities.

In our Environmental Justice Strategy and Implementation Plan, you can find many programs that are already making a difference, such as the National Institute of Environmental Health Sciences (NIEHS) Minority Worker Training Program. This program has awarded grants in more than 30 communities across the United States to recruit and train individuals who live in vulnerable communities at risk of exposure to contaminants for employment in the environmental field.

The Affordable Care Act, the health reform law of 2010, includes a new community transformation grant program that builds on the Economic Empowerment Zone model. By promoting healthy lifestyles, especially among population groups experiencing the greatest burden of chronic disease, these grants help improve health, reduce health disparities, and control health care spending. The Centers for Disease Control and Prevention made 61 awards, totaling approximately \$103 million, to state and local government agencies, Tribes, and territories, and to non-profit organizations. Several awardees are planning to focus on expanding efforts to address healthy and safe physical environments.

With the release of our Strategy and Implementation Plan, we are renewing our commitment to working with our Federal partners to promote environmental justice. Equally important, we are reaffirming our commitment to work with communities who are eager to get involved in this effort. We look forward to this collaboration as we continue to focus on building safe and healthy communities.

Kathleen Sebelius
Secretary, U.S. Department of Health and Human Services



Secretary Sebelius (second from right) at a community roundtable in New Orleans with Dr. Beverly Wright, Deep South Center for Environmental Justice Executive Director (left), and other participants.

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2012 Environmental Justice Strategy and
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February 2012

Environmental Justice

Environmental Justice is “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies”. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations* requires each Federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” The Executive Order also states that “each Federal agency responsibility set forth under this order shall apply equally to Native American programs.”

HHS Mission

The mission of the U.S. Department of Health and Human Services (HHS) is to enhance the health and well-being of Americans by providing for effective health and human services and by fostering sound, sustained advances in the sciences underlying medicine, public health, and social services. HHS is the U.S. government’s principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help themselves.

HHS Vision for Environmental Justice

The HHS vision for environmental justice is:

“A NATION THAT EQUITABLY PROMOTES HEALTHY COMMUNITY ENVIRONMENTS AND PROTECTS THE HEALTH OF ALL PEOPLE.”

HHS EJ Guiding Principles

The 2012 HHS EJ Strategy* provides direction for HHS efforts to achieve environmental justice as part of its mission by: (1) identifying and addressing disproportionately high and adverse human health and environmental effects on low-income populations and Indian Tribes, and (2) encouraging the fair treatment and meaningful involvement of affected parties with the goal of building healthy, resilient communities and reducing disparities in health and well-being associated with environmental factors. Driven by public input and HHS support, the strategy maintains the following three guiding principles:

- Create and implement meaningful public partnerships
- Ensure interagency and intra-agency coordination
- Establish and implement accountability measures

* Link to the 2012 HHS Environmental Justice Strategy and Implementation Plan:
<http://www.hhs.gov/environmentaljustice/strategy.html>

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HHS EJ Strategic Elements

On the basis of the guiding principles, the 2012 HHS EJ Strategy is organized into four strategic elements; (1) Policy Development and Dissemination, (2) Education and Training, (3) Research and Data Collection, Analysis, and Utilization, and (4) Services. The 2012 HHS EJ Strategy reflects new and ongoing actions that are underway or planned for the near term. Each strategic element has targeted goals, strategies, and actions to be undertaken by HHS. The heightened coordination within and outside of HHS and the engagement of communities and other stakeholders will facilitate the implementation of the 2012 HHS EJ Strategy and support the realization of the HHS vision for environmental justice.

POLICY DEVELOPMENT AND DISSEMINATION – EJ ACTIONS

| |
|--|
| A.1 Incorporate, where feasible and appropriate, environmental justice in award criteria of HHS grants and other funding opportunities. |
| A.2 Update existing public information materials on Title VI to include information and resources on environmental justice. |
| A.3 Conduct outreach events to educate local communities on the purpose and functions of the HHS Office for Civil Rights. |
| A.4 Update the HHS NEPA Policy to incorporate relevant environmental justice guidance and the principles of environmental justice. |
| B.1 Integrate environmental justice principles and EJ actions into the HHS Strategic Sustainability Performance Plan (SSPP). |
| B.2 Conduct a vulnerability assessment of HHS’s programs to climate change and develop an adaptation strategy, as required by Executive Order 13514. |
| B.3 Promote the consideration of factors such as health, environment, distributive impacts and equity in the development of Federal agencies’ policies and program planning. |
| B.4 Advance research that contributes to a better understanding of the relationship between health, sustainability, and environmental quality to support environmental justice efforts and initiatives. |
| B.5 Support research on potential health impacts of climate change, including the impacts of climate mitigation and adaptation measures that includes methodologies such as community-based participatory research and incorporates environmental justice principles. |
| B.6 Produce guidance for state, local, territorial, and tribal health departments on integrating extreme weather and public health surveillance systems with special emphasis on communities most vulnerable to changes in extreme weather patterns, including minority and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures. |
| B.7 Develop guidance on identifying the spatial and temporal extent of climate and extreme weather vulnerability and risk within communities containing existing environmental inequalities. |
| B.8 Develop guidance on how state, local, territorial, and tribal public health departments can adopt |

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policies and programs that minimize climate-related health impacts among vulnerable populations, including minority and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures.

B.9 Build community resilience and sustainable, stronger health and emergency response systems in at-risk populations with disproportionately high and adverse environmental exposures to prevent or reduce emerging health threats and chronic health problems.

B.10 Strengthen community partnerships, in particular among vulnerable populations, to organize adaptation measures to prevent health impacts of climate change at the local level.

C.1 Collaborate, where appropriate and feasible, with Federal partners to advance a “health in all policies” approach and reduce disproportionately high and adverse environmental exposures.

EDUCATION AND TRAINING – EJ ACTIONS

A.1 Increase public awareness of and access to information on health and environmental justice by developing an HHS environmental justice website.

A.2 Partner with other Federal departments to develop and implement integrated educational outreach and intervention programs.

A.3 Prepare guidance for HHS-funded worker training programs that are designed to assist disadvantaged communities.

B.1 Expand and promote educational outreach on health and environmental justice to primary health care and behavioral health care providers, other health professionals, public health professionals and the human services workforce.

B.2 Incorporate environmental justice and environmental and occupational safety and health education in the training curricula.

B.3 Increase partnerships with Historically Black Colleges and Universities, Tribal Colleges and Universities, and Hispanic-Serving Institutions.

C.1 Develop and implement a training program for HHS employees on the principles and practice of environmental justice, including community engagement.

RESEARCH & DATA COLLECTION, ANALYSIS, AND UTILIZATION– EJ ACTIONS

A.1 Draft and implement guidance to HHS agencies conducting or funding research in partnership with minority and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures.

A.2 Host a Health and Environmental Justice Workshop periodically in conjunction with disproportionately impacted communities.

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|---|
| A.3 Increase public access to information about research and data by expanding HHS Environmental Justice web pages. |
| B.1 Strengthen capacity for research on the health effects of disproportionately high and adverse environmental exposures in minority and low-income populations and Indian Tribes. |
| C.1 Promote inclusion of questions related to industry, occupation and other parameters of the workplace in HHS-supported surveys and other data collection instruments. Promote analysis of data related to occupational safety and health collected from HHS-supported surveys and other data collection instruments. |
| C.2 Partner with EPA and other Federal departments to review and update community mapping tools and other databases designed to identify minority and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures and health effects. |
| C.3 Expand information on health disparities and environmental justice concepts on the National Center for Environmental Health's (NCEH) National Environmental Public Health Tracking Network. |

SERVICES– EJ ACTIONS

| |
|--|
| A.1 Promote inclusion and use of environmental and occupational exposure history in electronic health records (EHR). |
| A.2 Promote the availability of specialty resources in environmental health to health care providers. |
| A.3 Improve the quality of behavioral health care received by minority and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures. |
| B.1 Evaluate the use of health impact assessments (HIA) in minority and low-income populations and Indian Tribes to achieve risk reduction and reduce health disparities. |
| C.1 Build community capacity to conduct community health assessments. |
| C.2 Assess health and human services needs for minority and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures. |
| C.3 Increase outreach to minority populations and low-income populations and Indian Tribes with disproportionately high and adverse environmental exposures to raise their awareness of the availability of technical assistance for applying for HHS funding. |
| D.1 Expand funding opportunities, where appropriate and feasible, to underserved communities for economic development and social services |



A Human Health Perspective On Climate Change

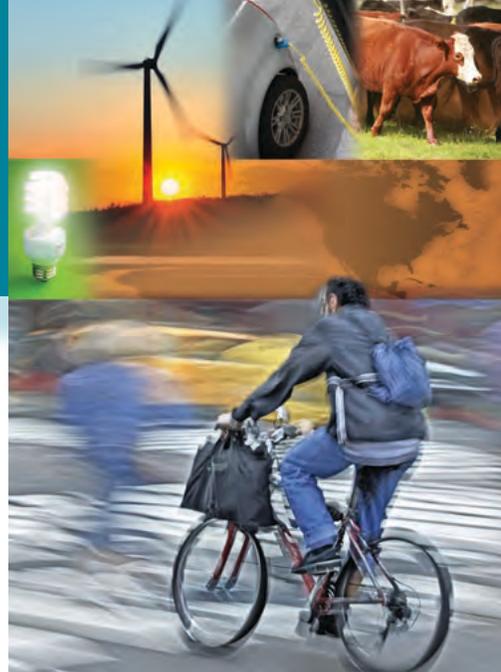
A Report Outlining the Research Needs on the Human Health Effects of Climate Change

*In a world of myriad
“what if” scenarios
surrounding climate change,
it becomes very complicated
to create wise health policies
for the future because of the
uncertainty of predicting
environmental change and
human decisions. The need for
sound science on which to base
such policies becomes more
critical than ever.*

There is abundant evidence that human activities are altering the earth’s climate and that climate change will have significant health impacts both domestically and globally. While all of the changes associated with this process are not predetermined, the actions we take today will certainly help to shape our environment in the decades to come. Some degree of climate change is unavoidable, and we must adapt to its associated health effects; however, aggressive mitigation actions can significantly blunt the worst of the expected exposures. Still, there will be effects on the health of people in the United States, some of which are already underway. As great as the domestic risks to U.S. public health are, the global risks are even greater.

Climate change and health issues transcend national borders, and climate change health impacts in other countries are likely to affect health in the United States as well. Famine, drought, extreme weather events, and regional conflicts—all likely consequences of climate change—are some of the factors that increase the incidence and severity of disease, as well as contributing to other adverse health impacts, making it imperative to address climate change-related decision making at local, regional, national, and global levels. The complicated interplay of these and other factors must be considered in determining the scope and focus of both basic and applied research on climate change and health.

A Human Health Perspective on Climate Change: A Report Outlining the Research Needs on the Human Health Effects of Climate Change was developed by an ad hoc Interagency Working Group on Climate Change and Health (IWGCCH). The report identifies relevant federal research and science needs, including research on mitigation and adaptation strategies. These needs encompass basic and applied science, technological innovations and capacities, public health infrastructure, and communication and education. The report is organized around 11 human health categories likely to be affected by climate change. This approach highlights direct links between climate change and federal research priorities that are often disease- or outcome-specific, and enables a holistic approach to exploring climate change-related health impacts.



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Next Steps

Recently, the National Research Council issued a report addressing how federal research and science could be improved to provide support for decision and policy making on climate change and human health.¹² Specifically, the report calls for a more complete catalogue of climate change health impacts, increasing the power of prediction tools, enhancing integration of climate observation networks with health impact surveillance tools, and improving interactions among stakeholders and decision makers. The IWGCCH approached this research needs assessment with these goals in mind. The next step will be for federal agencies to discuss the findings of this white paper with stakeholders, decision makers, and the public as they work to incorporate and prioritize appropriate research needs into their respective science agendas and collaborative research efforts. A coordinated federal approach will bring the unique skills, capacities, and missions of the various agencies together to maximize the potential for discovery of new information and opportunities for success in providing key information to support responsive and effective decisions on climate change and health.

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Human Health Consequences

1

Asthma, Respiratory Allergies, and Airway Diseases

Respiratory allergies and diseases may become more prevalent because of increased human exposure to pollen (due to altered growing seasons), molds (from extreme or more frequent precipitation), air pollution and aerosolized marine toxins (due to increased temperature, coastal runoff, and humidity) and dust (from droughts). Mitigation and adaptation may



significantly reduce these risks. Research should address the relationship between climate change and the composition of air pollutant mixtures to produce models to identify populations at risk.

.....
Allergic diseases impact approximately 50 million individuals within the United States, and are associated with significant health care costs and lost productivity.¹

2

Cancer



Many potential direct effects of climate change on cancer risk, such as increased duration and intensity of ultraviolet (UV) radiation, are well understood; however the potential impact of changes in climate on exposure pathways for chemicals and toxins requires further study. Science should investigate the effects of mitigation and adaptation measures on cancer incidence so that the best strategies can be developed and implemented; for example, research to inform understanding of the benefits of alternative fuels, new battery and voltaic cells, and other technologies, as well as any potential adverse risks from exposure to their components and wastes. Better understanding of climate change impacts on the capacity of ocean and coastal systems to provide cancer curative agents and other health-enhancing products is also needed.

.....
Cancer is the second leading cause of death in the United States, killing more than half a million people every year.²

3

Cardiovascular Disease and Stroke

Cardiovascular disease is the leading cause of death in the United States. Climate change may exacerbate existing cardiovascular disease by increasing heat stress, increasing the body burden of airborne particulates, and changing the distribution of zoonotic vectors that cause infectious diseases linked with cardiovascular disease. Science that addresses the effects of higher temperatures, heat waves, extreme weather, and changes in air quality on cardiovascular health is needed. This new information should be applied to development of health risk assessment models, early warning systems, health communication strategies targeting vulnerable populations, land use decisions, and strategies to meet air quality goals related to climate change. Some cardiovascular and stroke risks from climate change could be offset by reductions in air pollution by climate change mitigation.

.....
Approximately 80 million Americans have some form of cardiovascular disease including hypertension, coronary artery disease, heart attack, or stroke.³

4

Foodborne Diseases and Nutrition

Climate change may be associated with staple food shortages, malnutrition, and food contamination (of seafood from chemical contaminants, biotoxins, and pathogenic microbes, and of crops by pesticides). Research needs in this area include better understanding of how changes in agriculture and fisheries may affect food availability and nutrition, better monitoring for disease-causing agents, and identifying and mapping of complex food webs and sentinel species that may be vulnerable to climate change. This research could be used to prepare the public health



and health care sectors for new illnesses, changing surveillance needs, and increased incidence of disease, as well as to develop more effective outreach to affected communities.

.....
It is estimated that there are 38 million cases of foodborne illness in the United States each year, resulting in over 180,000 hospitalizations and 2,700 deaths.⁴

5

Heat-Related Morbidity and Mortality

The health outcomes of prolonged heat exposure include heat exhaustion, heat cramps, heat stroke,



and death. Extreme heat events cause more deaths annually in the United States than all other extreme weather events combined. Heat-related illness and deaths are likely to increase in response to climate change, but aggressive public health interventions such as heat wave response plans and heat early warning systems can minimize morbidity and mortality. Additional science should focus on developing these tools by defining environmental risk factors, identifying vulnerable populations, and developing effective risk communication and prevention strategies, and expanding their use in different geographic regions.

.....
It is estimated that 60% of the global population will live in cities by 2030, greatly increasing the total human population exposed to extreme heat.⁵

6

Human Developmental Effects

Potential consequences of climate change that would affect normal human development include: malnutrition, particularly during the prenatal period and early childhood as a result of decreased food supplies, and exposure to toxic contaminants; and biotoxins resulting from extreme weather events, increased pesticide use for food production, and increases in harmful algal



blooms in recreational areas. Research should examine effects on human development of adaptations to climate change such as agriculture and fisheries changes that may affect food availability, increased pesticide use to control for expanding disease vector ranges, and prevention of leaching from toxic waste sites into floodwaters during extreme weather events.

.....
About 3% of all children born in the United States have a birth defect, some of which can be attributed to environmental causes.⁶

of Climate Change

7 8 9 10 11

Mental Health and Stress-Related Disorders

By causing or contributing to extreme weather events, climate change may result in geographic displacement of populations, damage to property, loss of loved ones, and chronic stress—all of which can negatively affect mental health, particularly in vulnerable communities already experiencing social, economic, and environmental disruption. Research needs include and understanding how psychological stress acts synergistically with other forms of environmental exposures to cause adverse mental health effects and identifying vulnerable populations, identifying and incorporating key mental health outcomes in health impact assessments under a range of climate change scenarios, and developing migration monitoring networks to help ensure the availability of appropriate health care support.

An estimated 26.2% of Americans over the age of 18 suffer from a diagnosable mental health disorder in a given year.⁷

Neurological Diseases and Disorders

The United States has seen an increasing trend in the prevalence of neurological diseases and



deficits such as Alzheimer Disease, Parkinson Disease, and learning disabilities in children. Climate change, as well as attempts to mitigate and adapt to it, may further increase the number of neurological diseases and disorders. Research in this area should focus on identifying vulnerable populations and understanding the mechanisms and effects of human exposure to neurological hazards such as biotoxins (from harmful algal blooms), metals (found in new battery technologies and compact fluorescent lights), and pesticides (used in response to changes in agriculture), as well as the potentially exacerbating effects of malnutrition and stress.

Even a single low-level exposure to algal toxins can result in physiological changes indicative of neurodegeneration.⁸

Vectorborne and Zoonotic Diseases

Risk of infectious diseases such as malaria, hantavirus pulmonary syndrome, rabies, and Lyme disease may increase as a result of climate change due to expansions in vector ranges, shortening of pathogen incubation periods, and disruption and relocation of large human populations.

Research should enhance the existing pathogen/vector control infrastructure including vector and host identification; integrate human with terrestrial and aquatic animal health surveillance systems; incorporate ecological studies to provide better

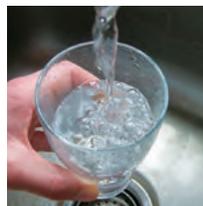


predictive models; and improve risk communication and prevention strategies.

In the absence of technologies to treat or vaccinate against many VBZD, some experts believe, population-level mortality from certain disease outbreaks could reach as high as 20–50%.⁹

Waterborne Diseases

Increases in water temperature, precipitation frequency and severity, evaporation-transpiration rates, and changes in coastal ecosystem health could increase the incidence of water contamination with harmful pathogens and



chemicals, resulting in increased human exposure. Research should focus on understanding where changes in water flow will occur, how water will interact with sewage in surface and underground water supplies as well as drinking water distribution systems, what food sources may become contaminated, and how to better predict and prevent human exposure to waterborne and ocean-related pathogens and biotoxins.

WHO estimates that 4.8% of the global burden of disease and 3.7% of all environment-related death is due to diarrheal disease, largely from water contamination.¹⁰

Weather-Related Morbidity and Mortality

Increases in the incidence and intensity of extreme weather events such as hurricanes, floods, droughts, and wildfires may adversely affect people's health immediately during the event or later following the event. Research aimed at improving the capabilities of healthcare and emergency services to address disaster planning and management is needed to ensure that risks are understood and that optimal strategies are identified, communicated, and implemented.

Poor preparedness and response to Hurricane Katrina led to increased illness and death, as well as economic costs of recovery in excess of \$150 billion.¹¹



Crosscutting Issues

Crosscutting issues relevant to preventing or avoiding many of the potential health impacts of climate change include identifying susceptible, vulnerable, and displaced populations; enhancing public health and health care infrastructure; developing capacities and skills in modeling and prediction; and improving risk communication and public health education. Such research will lead to more effective early warning systems and greater public awareness of an individual's or community's health risk from climate change, which should translate into more successful mitigation and adaptation strategies.



U.S. Global Change Research Program

Interagency Crosscutting Group on Climate Change and Human Health (CCHHG)

Who we are

The Interagency Crosscutting Group on Climate Change and Human Health (CCHHG) coordinates, implements, evaluates, and communicates federal research and scientific activities related to the human health impacts of global climate change. It is chartered by the U.S. Global Change Research Program (USGCRP), which coordinates the global change research and scientific activities of 13 federal agencies. The CCHHG is co-chaired by the National Institute of Environmental Health Sciences (NIEHS), the Centers for Disease Control and Prevention (CDC), and the National Oceanic and Atmospheric Administration (NOAA).



Members of the CCHHG represent 11 different federal agencies, with expertise spanning the continuum from basic health sciences to public health practice. The work group is guided by a One Health approach that recognizes the inextricable link between the health of humans, animals, and the environment. Members share information on agency activities, compile and evaluate science on the effects of climate change on health, and develop technical and informational products to empower people to take action in the face of health threats posed by climate change.



How we engage

The CCHHG engages a broad spectrum of health stakeholders through workshops, listening sessions, communities of practice, and other information sharing. The CCHHG brings together grantees and stakeholders from various agencies to share research findings and information, as well as inform priorities for future activities. The CCHHG also brings a health perspective to a number of federal and international global change settings and activities.

What we do

The CCHHG is actively involved in coordinating and implementing health-related activities to support the USGCRP Strategic Plan, which also aligns with many of the initiatives under the President's Climate Action Plan.

The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment,
www.globalchange.gov/health-assessment

The USGCRP Climate and Health Assessment will build on the health chapter of the Third National Climate Assessment, to provide a comprehensive, evidence-based and, where possible, quantitative estimation of observed and projected climate change impacts on human health in the U.S. The draft assessment is available for public comment through June 8, 2015.

Metadata Access Tool for Climate and Health (MATCH), match.globalchange.gov

MATCH is a publicly accessible online platform for searching and integrating metadata, or standardized contextual information, extracted from more than 9,000 health, environment, and climate science datasets from federal agencies. MATCH enables public health professionals, researchers, and other users to identify and access data that inform climate and health research and adaptation strategies.



Climate Data Initiative, climate.data.gov

The Climate Data Initiative integrates the federal government's extensive, freely available, climate-relevant data resources to stimulate innovation and entrepreneurship in support of national climate change preparedness. As part of the initiative, CDC led the development of a health topic area that comprises over 150 curated data sets related to health impacts from climate change to inform future innovative data tools.

Climate Resilience Toolkit, toolkit.climate.gov

The U.S. Climate Resilience Toolkit provides scientific tools and information to help people manage climate-related risks and opportunities, and improve their resilience to extreme events. A health section of the toolkit, developed with input from the CCHHG, provides useful information, tools, and case studies to build community and health care facility resilience.



Climate Change and Children's Health, epa.gov/children/presidential-task-force-environmental-health-and-safety-risks-children

Children are uniquely vulnerable to the health effects of climate change. Members of the CCHHG are engaged on the President's Task Force on Environmental Health Risks and Safety Risks to Children Subcommittee on Climate Change. The interagency group works to identify the needs of children to inform climate change mitigation, adaptation, and resilience strategies, and to convene a federal community of practice around climate change impacts on children's health.

International Efforts

The CCHHG supports the Intergovernmental Panel on Climate Change (IPCC), both through direct participation of its members as authors and review editors, and by supporting U.S. government participation in the overall IPCC process. The work group also supports the USGCRP and agencies such as the U.S. Department of State and U.S. Agency for International Development by bringing health expertise to negotiations, training and capacity-building activities, and collaborative scientific projects.

Learn more about climate change and health:

USGCRP Human Health page: www.globalchange.gov/explore/human-health

Third National Climate Assessment: nca2014.globalchange.gov

President's Climate Action Plan: www.whitehouse.gov/climate-change





Partnerships for Environmental Public Health (PEPH)

Environmental public health research aims to discover how the environment influences people's health and translate research into action to address harmful environmental exposures and health risks to the public.

Redefining environmental public health research

The PEPH program brings together scientists, community members, educators, health care providers, public health officials, and policymakers to coordinate environmental public health research at local, state, regional, tribal, national, and global levels. The multilevel partnerships fostered by PEPH help these groups discover and share vital information about the link between environmental exposures and disease, which can be used to promote health and reduce the risk of disease.

A hallmark of the PEPH program is the active engagement of communities in all stages of research, dissemination, and evaluation, to help prevent, reduce, or eliminate adverse health outcomes caused by environmental exposures. The program emphasizes both scientific advances and translation of research into practical resources, such as toolkits, brochures, and videos to explain research findings to stakeholders, communities, and individuals.

Examples of PEPH in action

Improving environmental health literacy

As part of an ongoing effort to increase environmental health literacy, the Community Outreach and Engagement Core within the University of North Carolina at Chapel Hill Center for Environmental Health and Susceptibility, funded by the National Institute of Environmental Health Sciences (NIEHS), offers training to public health professionals, so they can teach the public about how the environment can affect health. The core provides training on healthy homes and asthma. With the right training and education, these professionals can increase environmental health literacy so that individuals, families, and communities can make informed decisions and take actions to improve their health. Participants have shared this information with more than 500 individuals and families during home and clinical visits.

Another training session prepared nearly 100 public health nurses, social workers, housing professionals, and asthma advocates on how to inform patients and their families about reducing environmental triggers of asthma in the home.



PEPH Key Principles

- Engage diverse communities.
- Promote the worthiest science.
- Respond to current issues.
- Focus on prevention.
- Foster unified, integrated, and synergistic activities.
- Support research to improve theories, methods, and practice.
- Share the value of scientific advances and translational efforts.
- Promote research into action.

PEPH Goals

- Coordinate and integrate new and existing initiatives that involve communities and scientists collaborating on environmental public health research.
- Develop and evaluate strategies to communicate environmental public health messages to diverse audiences.
- Create and distribute materials to increase awareness and literacy about environmental health risks.

Additionally, more than 250 nurses viewed a webinar about federal guidelines to protect young mothers and their infants from lead poisoning.

WEBINAR Learn more about environmental health literacy and see the PEPH webinar at <http://1.usa.gov/1tRHk1G>.

Creating culturally relevant health messages

Researchers in the PEPH network partner with Native American communities to gain a greater understanding of how they view environmental health. Incorporating this cultural sensitivity into research and health messaging helps reduce environmental health disparities in Native American communities.

- University of Washington researchers worked with tribal college students to identify community, wellness, and interrelationship as core concepts of Native American environmental health. The researchers shared their findings with tribal communities by creating [The Return](#),¹ a story of environmental health from a Native American perspective.
- Researcher Annie Belcourt, Ph.D., conducted focus groups and interviewed tribal members to develop culturally driven resources to improve public health and prevent disease in Native American communities in Montana. Through Belcourt's digital storytelling project, tribal members produced their own health messages that highlight the role of the land and community in the Native American way of life.
- Researchers at the University of Arizona Superfund Research Program developed educational modules for tribal colleges related to mining on tribal lands. The modules teach tribal college students about the mining process and its effects on health and the environment. Mining can result in widespread contamination of the surrounding soil, water, and vegetation. This is especially troubling because the tribal way of life is closely tied to the land.

PODCAST Hear experts discuss the consequences of abandoned mines on tribal lands in a PEPH podcast at <http://1.usa.gov/1ywb5pw>.

Addressing environmental health disparities

Scientists from the Children's Environmental Health Center at Columbia University have found that exposure to cockroach and mouse allergens and traffic-related air pollutants increase a child's risk of developing asthma.^{2,3} Asthma is a serious respiratory disease that affects approximately one in 11 children in the U.S.⁴ Low-income and minority neighborhoods often bear a disproportionate share of environmental exposures that can trigger an asthma attack, and children living in these communities suffer a greater burden of the disease.⁵ By shedding light on the factors driving asthma disparities, this research can help reduce asthma prevalence among children living in disadvantaged neighborhoods.

The Alaska Community Action on Toxics partnered with 15 tribal communities in the remote region of Norton Sound, Alaska, to increase public understanding about local environmental contamination, health implications, and ways to limit exposure. Researchers showed that people living in these communities are exposed to high levels of polychlorinated biphenyls from abandoned military bases in the area, and elevated concentrations of persistent organic pollutants (POPs),

which are carried to the Arctic by wind and water currents.⁶ Children are especially vulnerable to the health effects of exposure to POPs, which may include cancer and adverse effects on the immune, reproductive, nervous, cardiovascular, and endocrine systems.⁷

Alaska Community Action on Toxics and its partners:

- Developed a toolkit for local health care professionals.
- Trained tribal environmental leaders and community health workers.
- Helped guide state, national, and international chemical regulation policies.

Reducing risk in occupational settings

Researchers from Emory University created a Web-based training tool with information on pregnancy health, pesticide safety, heat stress, ergonomic risk factors, and health-promoting and protective behaviors for women farmworkers in Florida. The researchers found that women were underestimating the risks associated with their jobs, and that most women continued to work in the fields while they were pregnant. Agriculture is one of the most hazardous occupations in the U.S.⁸ Farmworkers face potential exposures to agricultural chemicals, physical stress from long hours of repetitive bending and standing, and exposure to extreme heat and dehydration. The online training provided a cost-effective and accessible way to promote healthy, protective behaviors among female farmworkers, especially during pregnancy. The project was conducted in partnership with the Farmworker Association of Florida and the Farmworker Health and Safety Institute, and was funded by the National Institute for Occupational Safety and Health as part of the NIEHS [Research to Action](#)⁹ program.



Sharing best practices to reduce health risks: urban gardening

To help urban gardeners reduce their exposure to soil contaminants, researchers from the Boston University School of Public Health developed a manual to educate communities about soil quality and best practices for safe urban gardening. The research team also set up free soil testing stations at gardening festivals in the Boston area, to analyze soil samples for lead, explain the results to attendees, and provide tips to reduce exposure.

While urban gardens provide city residents access to affordable and healthy produce, urban soils can expose gardeners to harmful compounds, such as lead and polycyclic aromatic hydrocarbons.^{10,11} Increasing the community's awareness of soil conditions and providing gardeners with practical solutions, such as washing hands after gardening and building raised garden beds, can decrease exposure to common soil contaminants while maintaining the benefits of growing and eating locally grown food.

PODCAST Learn more about PEPH projects addressing the risks and benefits of urban gardening and listen to a PEPH podcast at <http://1.usa.gov/1vU52hb>.

NIEHS-funded programs that support PEPH

- **Breast Cancer and the Environment Research Program:** Funds a network of multidisciplinary scientists, clinicians, and community partners studying environmental exposures that occur throughout a woman's life and could predispose her to breast cancer.
- **Centers for Children's Environmental Health and Disease Prevention Research:** Study how environmental exposures affect children's health. Centers have Community Outreach and Translation Cores to translate research findings into information that community groups, health care professionals, and decision-makers can use to protect children's health.
- **Deepwater Horizon Research Consortia:** Includes community-university partnerships aimed at addressing the health effects stemming from the Deepwater Horizon oil spill.

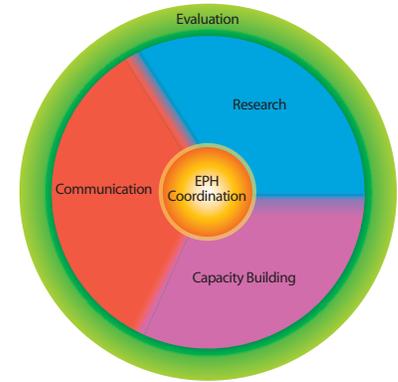


- **Environmental Health Sciences Core Centers Community Outreach and Engagement Cores:** Communicate environmental health research findings and concepts to their partners and convey the voice of the community to researchers.
- **Ethical, Legal, and Social Implications of Genomic Research:** Develops policies dealing with issues such as the protection of human subjects, the privacy of genetic information, and the possible discriminatory use of project data.
- **Research Supplements to Promote Diversity in Health-related Research:** Improves diversity of the research workforce, by supporting and recruiting students, postdoctoral fellows, and eligible researchers from underrepresented racial and ethnic groups; individuals with disabilities; and individuals from socially, culturally, economically, or educationally disadvantaged backgrounds.
- **Research Supplements to Promote Re-entry Into Biomedical and Behavioral Research Careers:** Encourages individuals with high potential to re-enter an active research career, after taking time off to care for children or attend to other family responsibilities.
- **Research to Action:** Brings together community members and environmental and occupational health researchers to investigate the potential health risks of environmental and occupational exposures.
- **Superfund Research Program:** Supports the needs of communities impacted by hazardous waste sites and translates research findings into information that stakeholders and the general public can use to protect human health.
- **Understanding and Promoting Health Literacy:** Supports research focused on measuring and increasing environmental health literacy, so that policymakers, health care professionals, and communities can make informed decisions concerning environmental exposures and health.
- **Worker Training Program:** Trains workers to protect themselves from exposures when handling hazardous waste or responding to emergencies involving hazardous materials.

The PEPH model: coordinated activities in research, communication, capacity building, and evaluation

The PEPH model categorizes activities into five primary areas — coordination, research, communication, capacity building, and evaluation — with interaction and crossover among them.

Evaluation is an all-encompassing component in the PEPH model. The [PEPH Evaluation Metrics Manual](#)¹² provides examples of tangible metrics that PEPH grantees and their community partners can use to plan, implement, and evaluate a program or project. Documenting achievements related to building community partnerships and translating research is critical for demonstrating the value of environmental public health.



Stay connected with the PEPH network

Podcasts: The Environmental Health Chat podcast



series explores how environmental exposures affect our health. Podcast topics include hydraulic fracturing, contaminants at schools, mercury in seafood, breast cancer and the environment, asthma and diet, the epigenome, and the exposome. Listen to the podcasts at <http://1.usa.gov/1vXc1qN>.

Newsletter: Each month, the PEPH newsletter highlights projects that align with PEPH program goals. It also includes events, resources, and funding opportunities relevant to environmental public health. Read the current issue and subscribe at <http://1.usa.gov/1tZKwrf>.

Webinar series: PEPH conducts webinars to promote interactions among grantees, increase awareness of common issues and approaches, and facilitate consideration of emerging concerns. Anyone interested in environmental public health is welcome to join. For more on the webinars, visit <http://1.usa.gov/12lfU6>.

Resources: The PEPH resources page has educational and outreach materials developed by PEPH grantees and their community partners to increase awareness of environmental health issues and topics. Find them at <http://1.usa.gov/1z7rVBW>.

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For more information on the PEPH program, visit www.niehs.nih.gov/peph or follow on Twitter at www.twitter.com/NIEHS_PEPH.

¹ University of Washington. 2013. The Return. Available: <http://depts.washington.edu/ceeh/downloads/TheReturnBook.pdf> [accessed 5 December 2014].

² Olmedo O, Goldstein IF, Acosta L, Divjan A, Rundle AG, Chew GL, Mellins RB, Hoepner L, Andrews H, Lopez-Pintado S, Quinn JW, Perera FP, Miller RL, Jacobson JS, Perzanowski MS. 2011. Neighborhood differences in exposure and sensitization to cockroach, mouse, dust mite, cat and dog allergens in New York City. *J Allergy Clin Immunol* 128(2): 284-292.

³ Cornell AG, Chillrud SN, Mellins RB, Acosta LM, Miller RL, Quinn JW, Yan B, Divjan A, Olmedo OE, Lopez-Pintado S, Kinney PL, Perera FP, Jacobson JS, Goldstein IF, Rundle AG, Perzanowski MS. 2012. Domestic airborne black carbon and exhaled nitric oxide in children in NYC. *J Expo Sci Environ Epidemiol* 22(3): 258-266.

⁴ CDC (Centers for Disease Control and Prevention). 2013. Asthma's impact on the nation: data from the CDC National Asthma Control Program. Available: http://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf [accessed 5 December 2014].

⁵ Akinbami LJ, Moorman JE, Bailey C, Zahran HS, King M, Johnson CA, Liu X. 2012. Trends in asthma prevalence, health care use, and mortality in the United States, 2001-2010. NCHS Data Brief, No. 94. Hyattsville, MD: National Center for Health Statistics.

⁶ Carpenter DO, DeCaprio AP, O'Hehir D, Akhtar F, Johnson G, Scudato RJ, Apatiki L, Kava J, Golodergin J, Miller PK, Eckstein L. 2005. Polychlorinated biphenyls in serum of the Siberian Yupik people from St. Lawrence Island, Alaska. *Int J Circumpolar Health* 64(4):322-335.

⁷ WHO (World Health Organization). 2010. Persistent organic pollutants: impact on child health. Available: www.who.int/ceh/publications/persistent_organic_pollutant/en/ [accessed September 9, 2014].

⁸ OSHA (Occupational Safety and Health Administration). 2013. Safety and health topics: agricultural operations. Available: www.osha.gov/dsg/topics/agriculturaloperations/ [accessed October 28, 2014].

⁹ NIEHS (National Institute of Environmental Health Sciences). 2012. Research to Action. Available: www.niehs.nih.gov/research/supported/dert/programs/peph/prog/rta/index.cfm [accessed 5 December 2014].

¹⁰ Clark HF, Brabander DJ, Erdil RM. 2006. Sources, sinks, and exposure pathways of lead in urban garden soil. *J Environ Qual* 35(6):2066-2074.

¹¹ Heiger-Bernays W, Fraser A, Burns V, Diskin K, Pierotti D, Merchant-Borna K, McClean M, Brabander D, Hynes HP. 2009. Characterization and low-cost remediation of soils contaminated by timbers in community gardens. *Int J Soil Sediment Water* 2(3):5.

¹² NIEHS (National Institute of Environmental Health Sciences). 2012. Evaluation Metrics. Available: www.niehs.nih.gov/research/supported/dert/programs/peph/metrics/index.cfm [accessed 5 December 2014].