

Sign Up for Annual Conference 2023 in Boston!


This spring HEI will welcome scientists, policymakers, sponsors, and students to its hometown of Boston, Massachusetts, for the institute's Annual Conference 2023. The event convenes April 30–May 2 at the Boston Renaissance Waterfront Hotel and features the latest research findings on air pollution and health.

Sessions will highlight hot topics across the air-pollution-and-health field, with environmental justice and consideration of effects on susceptible and vulnerable populations as cross-cutting themes. A detailed program, including speakers, is available on our [website](#).

Here are the sessions at a glance:

- Advancing Policy-Relevant Science at HEI: Dan Greenbaum's Legacy and the Road Ahead

- Presentations by the Winners of the 2023 Jane Warren Award
- Spotlight on HEI Activities and Future Directions
- Health Effects of Traffic-Related Air Pollution in a Changing Transportation Landscape
- Measuring Cumulative Exposures to Air Pollution at the Community Level
- Exploring the Link Between Air Pollution and Health in High Pollution Environments: Insights from Recent Research Studies
- Addressing Air Pollution and Climate Change with Shared Solutions

For more information and to register, visit www.healtheffects.org/meeting/annual-conference-2023. 

Research and Review Committees Welcome New Members

HEI recently appointed three distinguished scientists to serve on its scientific committees. In collaboration with institute staff, these committees perform distinct and independent roles to ensure the quality and

integrity of HEI-funded work. The Research Committee oversees new and ongoing research projects; the Review Committee critically reviews the results. Members can serve a maximum of two four-year terms.



Christina H. Fuller

Christina H. Fuller, Research Committee, is an associate professor in the School of Environmental, Civil, Agricultural and Mechanical Engineering at the University of Georgia College of Engineering.



Ulrike Gehring

Fuller is an environmental health scientist dedicated to research that investigates relevant questions concerning environmental exposures and impacts. Her research aligns three related areas: (1) fate and transport of air pollution; (2) disproportionate environmental burdens on marginalized populations; and (3) novel solutions to pollution exposures. She is dedicated to community engagement in research and the democratization of information that promotes environmental equity.



Neeta Thakur

Fuller is co-editor of the 2021 book *Ambient Combustion Ultrafine Particles and Health* that summarizes the emerging issue of ambient ultrafine particles and their health effects. She is a chartered member of the U.S. Environmental

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Two Distinguished Experts Join HEI Board

The HEI Board of Directors recently welcomed two eminent leaders in the fields of epidemiology and environmental law.

Ana V. Diez Roux is the Dana and David Dornsife Dean and Distinguished University Professor of Epidemiology at Drexel University's Dornsife School of Public Health, as well as director of the Drexel Urban Health Collaborative. She originally trained as a pediatrician in her native Buenos Aires, Argentina. She completed public health training at the Johns Hopkins University School of Hygiene and Public Health.

Before joining Drexel, Diez Roux served on the faculties of Columbia University and the University of Michigan, where she was chair



Ana V. Diez Roux



Martha Rudolph

of the Department of Epidemiology and director of the Center for Social Epidemiology and Population Health.

Diez Roux is internationally known for her research on the social determinants of population health and the study of how neighborhood physical and social environments affect health. Her research areas include social epidemiology and health disparities, environmental health effects, urban health, psychosocial factors, cardiovascular disease epidemiology, and social environment–gene interactions. She has led large research and training programs in the United States and Latin America, and is currently princi-

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Non-Tailpipe Emissions Studies Now Underway

Two studies funded under [Request for Applications 21-1, Quantifying Real-World Impacts of Non-Tailpipe Particulate Matter Emissions](#), are now in progress. Emissions from automobile exhaust systems have decreased in recent years thanks to the introduction of cleaner fuels and new control technologies on internal combustion engines, as well as increased use of hybrid and electric vehicles. However, emissions from use and wear of brakes, tires, and other non-tailpipe sources are gaining interest from researchers and regulators because non-tailpipe sources now contribute a higher fraction of the particulate emissions from motor vehicles.

These two new studies will measure mass and composition of ambient particles from non-tailpipe motor vehicle sources and assess the effects of such emissions on air quality, human exposure, and human health. Research teams will also measure concentrations of exhaust pollutants in an attempt to disentangle non-tailpipe and tailpipe pollution, to better understand how each affects human health.

The new studies are as follows:

“Improved Characterization of the Real-World Contributions and Impacts of Non-tailpipe Particulate Matter Emissions,” led by Greg Evans, University of Toronto, Canada.

This study will measure concentrations of non-tailpipe particulate matter across Toronto to determine how much non-tailpipe pollution people might breathe in everyday life and how to better measure these exposures in the future.

“Assessing the Impact of Non-exhaust Emissions from Traffic on the Asthmatic Airway (IONA),” led by Chris Griffiths, Queen Mary University of London.

In this study, participants with mild to moderate asthma will ride stationary bicycles on sidewalks in three London, UK environments (busy road characterized by stop-and-go traffic, high speed continuous traffic, and urban background) to measure how exposure to traffic with different mixtures of non-tailpipe and tailpipe emissions affects lung function of asthmatic adults. [HEI]

HEI Launches Environmental Justice Program

In recent years, scientists and policy makers have turned increasing attention to environmental justice (EJ) communities — or residential neighborhoods that experience disproportionate levels of pollution exposures and health effects.

HEI is currently expanding the scope of its EJ-related research activities with its new [Environmental Justice Program](#), and this past fall helped coordinate two important meetings aimed at sharing knowledge to better meet the needs of EJ communities.



Participants who joined HEI staff for the October workshop included, from left: Regan Patterson, University of California, Los Angeles; Jeffrey Brook, Co-Chair, HEI Research Committee, and University of Toronto; Paulina Lopez, Duwamish River Community Coalition; BJ Cummings, University of Washington; Paula Torrado Plazas, Physicians for Social Responsibility; Cesunica Ivey, University of California, Berkeley; Nalleli Hidalgo, T.E.J.A.S.; Jill Johnston, University of Southern California; Humberto Lugo Martinez, CleanAirNow; Mychal Johnson, South Bronx Unite.

“New Science to Inform Environmental Justice” Workshop

The first meeting, a [two-day October workshop](#) hosted by HEI in Atlanta, Georgia, brought together an array of stakeholders to share knowledge and identify best paths forward for HEI’s future EJ efforts.

Participants attended from across the United States and represented academic institutions, community organizations, non-profit organizations, government institutions, and HEI sponsors.

The workshop provided a setting to identify priorities, barriers, and solutions for advancing EJ through several different

formats: keynote presentations, a panel discussion, showcases of successful community-academic partnerships, and small-group breakout session discussions. Participants underscored the need for community members to drive the research questions and for new funding models to support partnership building, flexible research designs, and research translation that engages multiple sectors. HEI is extremely appreciative of the knowledge, stories, and lessons shared at this workshop.

“Evidence of Inequities” Forum

The second event occurred in early December, when HEI President Dan Greenbaum joined White House cabinet officials at a forum on “Evidence of Inequities: Leveraging Air Pollution Research Advancements for Environment Health Policy Decisions.”

The [virtual event](#) highlighted the work of researchers who are actively applying air quality science and technology data and tools to questions of EJ policy.

Greenbaum spoke on the need to move past describing environmental and health inequities, and instead, focus on building enduring partnerships between community organizations who are closest to the problem and scientists who can document the

issues and inform policy outcomes. He also emphasized the importance of tracking progress to assess whether policy actions are reducing disparities.

Other presenters described new and emerging air pollution monitoring, modeling, and remote-sensing technologies, and expanding opportunities for researchers to work directly with EJ communities.

The forum, one in a series of [White House Year of Evidence for Action](#) events, was presented by the White House Office of Science and Technology Policy in collaboration with the White House Office of Management and Budget and HEI. [HEI]



HEI at Climate Summit

HEI Vice President Bob O’Keefe was a panelist for a discussion on [“Clean Air as a Human Right: Air Quality Actions for Climate Mitigation, Adaptation, and Human Health”](#) at the United Nations COP27 summit in Sharm el-Sheikh, Egypt, in November.

Call for Traffic Studies

HEI has followed up its major review of the evidence on the health effects of traffic-related air pollution, presented in [Special Report 23](#), with a recently released request for applications, “Assessing Health Effects of Traffic-Related Air Pollution in a Changing Urban Transportation Landscape” (RFA 23-1). HEI aims to fund studies that use novel or improved methods and approaches to evaluate exposure to traffic-related air pollutants as technologies and fuels change, the vehicle fleet turns over, mobility transforms, and electrification makes greater inroads. The RFA is also seeking capacity-strengthening applications from low- and middle- income countries to fill a key gap identified in the Traffic review.


Preliminary applications were due on March 15. More information: www.healtheffects.org/research/funding/rfa/23-1-assessing-health-effects-traffic-related-air-pollution-changing-urban-transportation.

Expanding Opportunities

In addition to the traffic RFA, HEI is offering these other new opportunities for professional and emerging scientists who are interested in studying the health effects of air pollution:

Summer Fellowship: HEI is excited to have received 52 applications for the inaugural year of this new program. The fellowship aims to encourage and support undergraduate students from backgrounds underrepresented in the environmental health sciences to explore research opportunities through a paid fellowship with a dedicated mentor.

Jane Warren Trainee Conference Award: Graduate students and postdocs are invited to apply for this award, which supports their attending and presenting at HEI’s Annual Conference 2023. Applications were due by February 17.

Walter A. Rosenblith New Investigator Award for 2022: In December, HEI began seeking candidates for this award with the release of [Request for Applications \(RFA\) 22-1](#). Preliminary applications were due on February 10. 

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TWO DISTINGUISHED EXPERTS JOIN BOARD (Continued from page 1)

pal investigator of the Wellcome Trust-funded SALURBAL study (Salud Urbana en América Latina/Urban Health in Latin America Study).

Diez Roux has served on numerous editorial boards, review panels, and advisory committees including the Clean Air Scientific Advisory Committee of the Environmental Protection Agency (as chair), the Board of Scientific Counselors of the National Center for Health Statistics, the Committee on Health and Wellbeing in the Changing Urban Environment of the International Council for Science, and the Centers for Disease Control’s Community Preventive Services Taskforce. She is currently co-chair of the Population Health Roundtable of the National Academies of Science, Engineering, and Medicine (NASEM).

Diez Roux has received the Wade Hampton Frost Award for her contributions to public health from the American Public Health Association, the Award for Outstanding Contributions to Epidemiology from the American College of Epidemiology, and the Rothman Career Award from the Society for Epidemiologic Research. She is an elected member of the American Epidemiological Society, the Academy of Behavioral Medicine Research, and the National Academy of Medicine.

Diez Roux has been an active mentor of doctoral students, postdoctoral fellows, and junior faculty from diverse backgrounds.

Martha Rudolph, an environmental attorney, spent most of her career in the public sector, most recently as the director of environmental programs for the Colorado Department of Public Health and Environment. From 2007 to 2019 Rudolph was responsible for developing policy and direction for the department’s Air Quality, Environmental Health and Sustainability, Hazardous Materials and Waste Management, and Water Quality divisions. For the last year of his term, Colorado Governor Bill Ritter appointed Rudolph to serve as executive director for the department, where her responsibilities expanded to include oversight of the environmental programs as well as state public health programs.


Rudolph is a member and current chair of the Colorado Air Quality Control Commission, co-chair of the NASEM Environmental Health Matters Initiative, a member of the board of directors for the Environmental Research Institute of the States, and past co-chair of the membership committee and

Thanks to Queta Bond

Enriqueta Bond, president emerita of the Burroughs Wellcome Fund, stepped down from the HEI Board this past fall after 16 years of outstanding service.

“Queta played an instrumental role in diversifying Board membership and ensuring the highest standards of organizational governance,” said HEI President Dan Greenbaum. “She has left a legacy of a stronger Board and a stronger HEI.”

current member of the American College of Environmental Lawyers. Rudolph was chair of the Colorado Regional Air Quality Council from 2019 to 2021. She was a past president of the Environmental Council of States, co-chair of the ECOS Shale Gas Caucus, and chair of the ECOS Air Committee. She served as a member and vice-chair of the Colorado Water Quality Control Commission from 2000 to 2007, a member of the Colorado Oil and Gas Conservation Commission in 2010, and an advisory member of NASEM’s Division on Earth and Life Studies from 2016–2022.

Rudolph was a first assistant attorney general in the Colorado Attorney General’s Office; she was also in private practice, and served in-house at a natural gas pipeline company. Rudolph received her JD from Georgetown University Law Center. 

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HEI is a nonprofit organization funded jointly by government and industry to research and evaluate the health effects of air pollution. An overview of HEI, information on its current research program, and all published HEI reports are available for downloading, free of charge, from the website.

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Communicating the Science

Global View of Traffic and Health

Findings by an HEI special panel on traffic, air quality, and health were the focus of a [webinar](#) co-hosted in October by HEI and Za Zemiata, a Bulgarian environmental organization.

Hanna Boogaard, project leader of HEI's recently published [systematic review](#) on the health effects of long-term exposure to traffic-related air pollution, pointed out which populations are most affected by poor air quality.

Pallavi Pant, who leads HEI's Global Health Program, spoke about [State of Global Air reports for Southeast Europe](#), including data for cities that are often air pollution hotspots. She highlighted cities where active policy interventions have helped to improve air quality. (Two days earlier, Pant had discussed the [SoGA Cities report](#) in the Resources Radio podcast "[A Global Look at Urban Air Quality](#).")

Greenbaum Advising Consortium in China; Presents at Clean Air and Climate Roundtable in Beijing

HEI's Dan Greenbaum has been appointed to the senior advisory committee of the AiR-Climate-Health (ARCH) Integrated Study and Exchange Platform, a non-profit consortium jointly developed by Peking University with Fudan University, the Chinese Center for Disease Control and Prevention, the Chinese Academy of Environmental Sciences, and the Energy Foundation. ARCH aims to promote collaborative research on air quality, climate change, and health effects.

In February, Greenbaum also presented and participated in a roundtable on China-U.S. collaboration on air pollution and climate hosted by the Energy Foundation China and China Clean Air Policy Partnership (CCAPP). His contribution highlighted data from the [State of Global Air](#) on the progress China has made on clean air — and the continuing challenges.

Science on the 7th Continues!

This past fall, HEI presented the first four sessions of its new livestreamed monthly interview series, [Science on the 7th](#). Hosted by Pallavi Pant, the program brings together experts to discuss important topics in air quality, global health, and air pollution from key sources, including particulate matter, ozone, and traffic-related pollution.

The program, streamed on HEI's social media platforms, continues this winter. Details, along with recordings of past interviews, are available at www.healtheffects.org/science-on-the-7th.

Satellite Workshop Summary Now Available

HEI recently released a summary of its "Virtual Workshop on Health Applications for Satellite-Derived Air Quality: Opportunities and Potential Pitfalls," held last spring. The full program, speaker bios, slides, a recording, and the summary, are available [on our website](#). [HEI](#)

Keep Posted on HEI News!

HEI is pleased to announce the creation of our new monthly email, *The Monitor*. Each month, we'll share information about all that's going on with HEI, including new reports and publications, funding opportunities, upcoming events, ongoing research, and other updates from HEI's core programs, HEI State of Global Air, and HEI Energy. If you're not currently receiving our emails, [please sign up here](#). [HEI](#)

New Directions in Exposure Science and Epidemiology

HEI was a key contributor to two major global scientific conferences held in Europe this past fall.

The events, which HEI cosponsors annually, were presented by the [International Society for Environmental Epidemiology \(ISEE\)](#) in Athens, Greece, and by the [International Society of Exposure Science \(ISES\)](#) in Lisbon, Portugal.

Environmental Epidemiology

HEI staff participants at the [ISEE conference](#) included Pallavi Pant speaking on air pollution epidemiology in [India](#) and Hanna Boogaard discussing HEI's [major systematic review](#) of the health effects of traffic-related air pollution. In addition, they co-organized with [ISEE Europe](#) a successful session "Air Pollution and Health: The Case of Central and Southeast Europe." It featured three [HEI reports](#) on air pollution and its health impacts across Southeast Europe and served to identify research gaps as well as opportunities for research collaboration.

Francesco Forastiere, cochair of the HEI Panel on the Health Effects of Long-Term Exposure to Traffic-Related Air Pollution, was honored with the prestigious ISEE 2022 John Goldsmith Award and discussed HEI's systematic traffic review during his presentation "[Evidence Synthesis in Environmental Epidemiology](#)."

In addition, Frank Kelly, Review Committee member, gave a [key-note on microplastics](#). Many [ongoing HEI studies](#) were discussed, including studies led by Perry Hystad of Oregon State University; Payam Dadvand, Barcelona Institute for Global Health (ISGlobal), Spain; and Ole Raaschou-Nielsen, Danish Cancer Society Research Center, Copenhagen, Denmark.

Representing [HEI Energy](#), Anna Rosofsky described research underway exploring community exposures associated with unconventional oil and natural gas development in the United States.

Michael Brauer of the University of British Columbia, Canada, presented findings from [his major HEI study](#) of low-level exposure to PM_{2.5} in a cohort of 7.1 million Canadians.

Exposure Science

The [ISES conference](#), too, shared a wealth of innovative research. Among other topics, there was a discussion of exposure assessment tools (for instance, using satellite imagery to count moving and parked vehicles) and studies of traffic-related air pollution and emissions from subways and above-ground trains.

Heresh Amini from the University of Copenhagen, Denmark, presented population exposure estimates based on Google Street View that he is using in his Walter A. Rosenblith New Investigator [study](#).

Community-Engaged Research

At both conferences, talks on environmental justice-related work — concerning populations that bear the highest burden of pollution exposure — were well represented. To cite one of many examples, [Stuart Batterman](#) of the University of Michigan (who published HEI studies in 2014 and 2020) told the ISES audience that while community partnerships have increased environmental health literacy and resulted in some mitigation, more work is needed to provide actionable data products that support community needs. [HEI](#)


Thanks to Barbara Hoffmann

HEI extends heartfelt thanks to Barbara Hoffmann of the University of Dusseldorf, Germany, who recently stepped down after contributing her extensive epidemiological expertise and public health perspective to the Research Committee during nine years of extraordinary service.

NEW COMMITTEE MEMBERS (Continued from page 1)

Protection Agency (EPA) Clean Air Scientific Advisory Committee. She earned her bachelor's degree in environmental engineering from Northwestern University and both master's and doctoral degrees from the Harvard School of Public Health.

Ulrike Gehring, Review Committee, is an associate professor in the Environmental Epidemiology Division of the Institute of Risk Assessment Sciences at Utrecht University, the Netherlands. She obtained an MS in statistics from the University of Dortmund, Germany, in 1998 and a PhD in environmental epidemiology from the Ludwig-Maximilians University, Munich, Germany, in 2004. Her research focuses on environmental impacts on child health, with a special focus on long-term health effects of ambient air pollution and determinants of asthma and allergies. She is co-principal investigator of the Dutch PIAMA (Prevention and Incidence of Asthma and Mite Allergy) birth cohort study. PIAMA and other birth cohorts play an important role in her research and allow her to investigate exposure–health relationships through different stages of life. Gehring is actively involved in the International Society for Environmental Epidemiology and a current member of the Environment and Health Committee of the European Respiratory Society. She is an associate editor of *Environmental Health Perspectives*.

Neeta Thakur, Research Committee, is an associate professor at the University of California, San Francisco (UCSF) and a physician-scientist specialized in pulmonary and critical care medicine. Her research focuses on the short- and long-term health effects of multilevel stressors, with emphasis in historically marginalized populations. She has linked multiple data types (biological, individual, and environmental) to demonstrate that environmental and social risk factors are geospatially distributed, disproportionately burden communities of color, and are associated with clinically relevant health outcomes. Thakur is partnering with environmental justice communities to co-create place-based mitigation strategies to reduce health effects of these stressors. She has received several awards for her work, including the Parker B. Francis Fellowship and the American Thoracic Society (ATS) Early Career Achievement Award. She is the immediate-past chair of the ATS Health Equity and Diversity Committee, providing guidance on health equity issues, including input on ATS's stance related to air pollution and climate change. Thakur received a BS in exercise physiology from the University of Arizona, where she also obtained her MD-MPH via a dual degree program. She completed her residency training and fellowship training at UCSF. 

Report Examines Pollution's Health Impacts in Africa

Nearly all the African continent faces severe health impacts caused by air pollution, with several countries experiencing some of the highest levels of air pollution in the world, according to an HEI report published in October. The report, *The State of Air Quality and Health Impacts in Africa*, provides a comprehensive analysis of major air pollution sources and related health impacts on the continent of more than 1.2 billion people.

According to the report, air pollution is the second leading risk factor for death across Africa, home to five of the top ten most heavily polluted countries worldwide in terms of ambient fine particulate matter (PM_{2.5}). In 2019, air pollution contributed to an estimated 1.1 million deaths in Africa, with 63% linked to exposure to household air pollution (HAP).

Newborns and children under five years old are at a particularly high risk for severe health impacts from HAP. About 236,000 newborns die within the first month of life from air pollution exposure, with 80% of those coming from HAP. In 2019, 14% of all deaths in children under five across Africa were linked to air pollution.



The report draws data from across the continent with a particular focus on these five countries.

New Online Tool: East Africa Database

HEI has launched a geographically organized [interactive database](#) that highlights the growing body of evidence on air pollution and health in East Africa.


The database currently contains 62 studies across the 7 countries in the region: Burundi, Ethiopia, Kenya, Rwanda, South Sudan, Tanzania, and Uganda.

Users can interact with a map and download curated lists of documents. In addition to geographic identification, the literature database can also be searched by date, type of study, and health outcome.

Help us expand the database: If you would like to add a relevant study to the database in any language, please email the citation (and if possible, a PDF copy or a weblink) to awright@healtheffects.org. If the article is not in English, please include one to two sentences about the study in English.

The impacts on newborns and infants also have long-term consequences for overall health, including issues with lung development and increased susceptibility to communicable diseases, such as lower respiratory infections in young children.

This report draws together data from the [Global Burden of Disease](#) project and from a recent global assessment of air pollution sources to discuss air pollution trends, sources, and associated disease burdens across this important region, with a particular focus on Egypt, Ghana, Democratic Republic of Congo, Kenya, and South Africa.

The report was produced by the [State of Global Air](#) initiative, a collaboration between the Health Effects Institute and the Institute for Health Metrics and Evaluation's Global Burden of Disease project. 

Staff News



Victor Nthusi has joined HEI's Global Health Program as a consulting research fellow with over eight years of experience in environmental health and pollution control in low- and middle-income countries in Africa, Asia, and Latin America. He has extensive experience in environmental monitoring and policy evaluation, and he contributes expertise to various initiatives aimed at promoting improved air quality in East Africa. Nthusi has a deep interest in the development of norms and best practices to address environmental issues (air pollution, climate change, and their impacts on human health) and their integration into

policies and strategies. He holds a master's in environmental chemistry from the University of Nairobi, Kenya.

Alexis Vaskas is HEI's new digital communications manager. She focuses on strategic communications efforts for the institute, with an emphasis on website development, social media management, and devising email marketing campaigns for HEI's core and Global Health programs as well as the HEI Energy affiliate. She received a B.A. in communications from Misericordia University and earned a professional digital marketing certification from Cornell University. 

