
Expanding Our Vision for a Healthier Environment

2025 HEI Annual Report

A Message from HEI’s President and Chair of the Board

This past year marked a period of meaningful progress and measurable impact for HEI. The [publication of eight new research reports](#) from our foundational Environment and Health program is a testament to the long tradition of providing credible, independent science to government, industry, policymakers, and academia, allowing them to make the best decisions possible to improve the environment and public health.

HEI’s [Energy](#) program also released a compelling portfolio of research reports on potential population exposures stemming from unconventional oil and gas development. In addition, the program hosted a series of educational exchanges on relevant energy research and data collection, including hosting a number of virtual and in-person meetings and discussions.

HEI’s [Global Initiatives](#) program contributed on a global scale to a greater understanding of the health effects of air pollution. This year, the program hosted in-person workshops and webinars, co-hosted a Clean Air Forum in Nairobi, and released regional reports on East Africa and South Asia. We also established a new partnership with NCD Alliance and strengthened existing partnerships with UNICEF, continuing our focus on collaborative relationships. Through the release of the [State of Global Air 2025 report](#), the program provided a comprehensive analysis of global data for air quality and health that will continue to have relevance and value around the world for years to come.

HEI continued its commitment to supporting and mentoring students and early-career professionals working and seeking careers in the environmental health sciences. Thanks to ongoing support from outside partners, we’ve continued to grow our awards programs, including our Jane Warren Award and our Summer Fellowship program.

This past year we hosted our [Annual Conference in Austin, Texas](#). Over three days, more than 250 people attended our sessions, panels, and posters, and keynote remarks were given by Austin Mayor Kirk Watson.

As always, we are enormously grateful to our independent Research and Review committees, as well as our committees for Energy, Global Initiatives, and CHERI. These experts ensure that HEI’s work is fully impartial and highly trusted by the scientific community, academia, policymakers, industry leaders, and other stakeholders.

We would like to recognize the many researchers and research teams whose work is advancing knowledge and laying the foundation for future progress. We also thank our vibrant national and global networks and partners, who amplify and apply this work so effectively to inform critical environmental health decisions. Finally, we extend our sincere appreciation to our sponsors in government and industry for their sustained support and for helping ensure that our work remains credible, independent, and impartial.

As we move forward under our Strategic Research Plan 2025–2030, we are well positioned to pursue new research opportunities and priorities that address the most pressing environmental and health challenges of our time. We remain steadfast in our belief that sound science must continue to serve as the foundation for informed decision-making—and we are grateful to all who help make that possible.



ELENA CRAFT
HEI President and CEO

A handwritten signature in black ink, appearing to read 'E.Craft'.



RICHARD A. MESERVE
Chair, HEI Board of Directors

A handwritten signature in black ink, appearing to read 'Richard Meserve'.

Credible science is vital to protecting public health. For over 45 years, the Health Effects Institute (HEI) has provided independent and impartial science to inform decisions that foster a healthier environment for all. We bring government, industry, decision-makers, and scientists together to translate research into real-world solutions.



17

major reports on air pollution and public health were published

Some Highlights from 2025



14

awards were issued to support the next generation of research excellence



250

attendees and

90

poster presenters came together at our Annual Conference



Science on the 7th:

hosted

11

livestreamed conversations with

15

guests from

10

countries



8

webinars convened

1,800+

people to share science, strengthen capacity, and forge connections

Environment and Health

Impartial science
driving solutions that
lead to cleaner air and
longer, healthier lives



As the United States undergoes major transitions in transportation and energy, new technologies and fuels bring both opportunities and potential health risks. Through these changes, HEI remains committed to ensuring that the best possible science is available to guide health-protective decisions. All these developments amplify the urgency and importance of HEI's Environment and Health program, which assesses environmental risks to human health in a changing world.

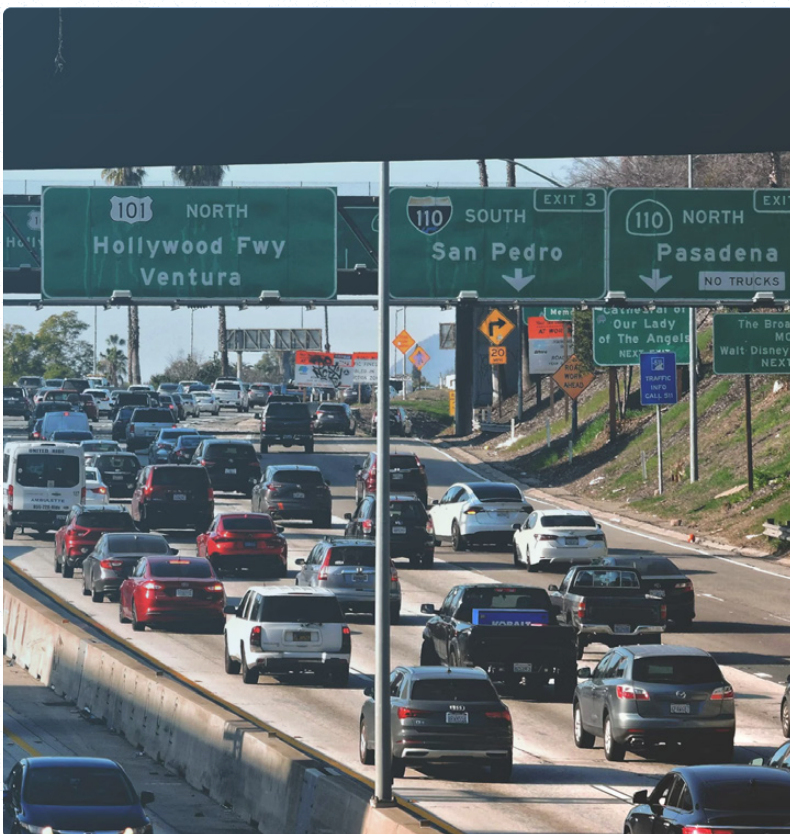
Assessing How Actions Impact Public Health

Independent, credible science can drive solutions that lead to cleaner air and longer, healthier lives. As decision-makers

consider air quality interventions, it is critical to understand the potential effects on health. HEI's accountability studies assess the outcomes of these actions, yielding lessons that can inform future efforts to improve air quality and deliver public health benefits.

In the past year, several accountability studies demonstrated how changing policies, regulations, and circumstances can affect air quality and health, even when they are not intended to do so. For example, a [study](#) led by Kai Chen of the Yale School of Public Health showed that in early 2020, air pollution levels dropped during COVID-19 lockdowns, an unintended consequence of constraining human activity and mobility. In another [study](#), researchers led by Perry Hystad of Oregon State University found that short-term, localized measures aimed at curbing traffic congestion appear to have had little impact in terms of preventing adverse birth outcomes. However, they also found that long-term national tailpipe emissions regulations have likely helped reduce adverse birth outcomes, adding to the large body of evidence in support of such regulations.

Accountability research has long stood as a hallmark of HEI's unique, unbiased research approach, and is an area of increasing interest to a variety of stakeholders. As technologies and fuels continue to change, the vehicle fleet turns over, and mobility transforms, HEI will continue its efforts to support the most relevant research to inform decision-making and meet the current moment.

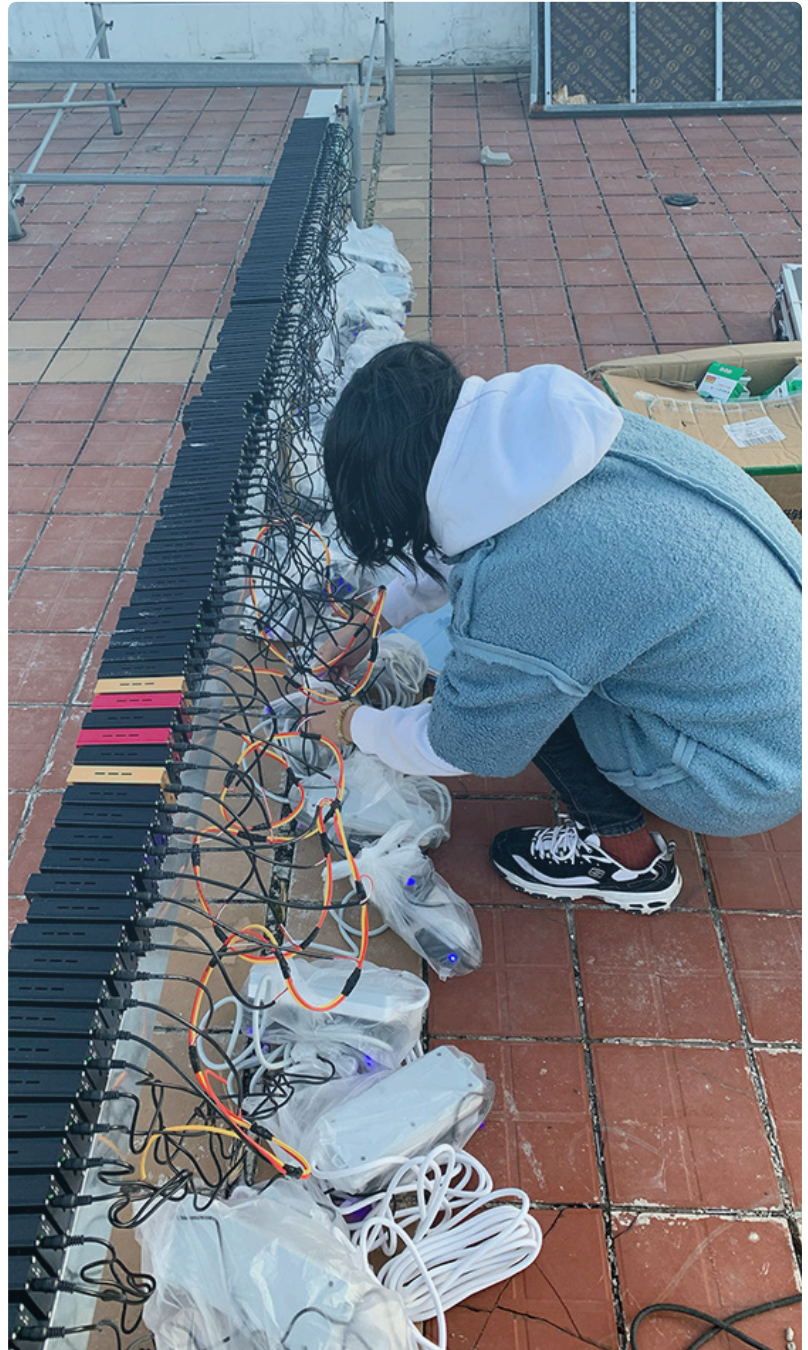


Traffic on Los Angeles freeway

Strengthening Scientific Methods to Accelerate Insights

Untangling the effects of air pollution on health is a complex undertaking. How can we know that we are collecting the right data and interpreting it correctly? HEI supports studies that critically assess the strength of the evidence, refine scientific methods, and optimize the feasibility, cost-effectiveness, and reliability of research.

Stronger methods lead to better science. For example, Joseph Antonelli of the University of Florida and his team addressed common challenges that researchers face when assessing the health effects of exposure to air pollution mixtures. They provided [new statistical approaches](#) to support causal inference (determining the cause-and-effect relationship between different variables), address bias, and enhance exposure assessment in future air pollution studies.



Research being conducted by Jill Baumgartner's team for Research Report 235

Refining scientific methods can also help us get more bang for our research buck. For example, one dilemma scientists face is determining how much data are needed to support sound decisions. More measurements can boost data quality, but can also result in increased costs. What measurement strategies can give us the data we need to make decisions, while limiting costs and logistical complexity? Lianne Sheppard of the University of Washington and colleagues compared different approaches to come up with practical guidance for researchers. For example, for mobile monitoring campaigns, the team [reports](#) that taking samples during all days of the week,

most hours of the day, and at least two seasons is important to optimize exposure assessment. In another [study](#), researchers led by Kees de Hoogh of the Swiss Tropical and Public Health Institute examined the importance of accounting for people's daily movements when assessing pollution exposures. They found that residential-only and mobility-enhanced pollution exposure estimates were highly correlated, suggesting that estimating exposure based on where people live, which is a simpler approach, can be a reasonable choice for many studies.



Children boarding a school bus

To learn more about the impactful work in the Environment and Health program, refer to the following sections:

- A Legacy of Enduring Impact on pages 18–19
- Fostering the Next Generation on pages 20–22

Energy

**Delivering high-quality
impartial science on
exposures and health
in the face of evolving
energy systems**





Rig in the Denver-Julesburg Basin (Photo: A.W. Eustes III, Colorado School of Mines)

Rising global energy demand requires a strategic approach to balancing energy security, economic growth, and public health. In the face of complex and evolving energy systems, society stands to benefit from research that pinpoints how emerging energy technologies can enhance health while minimizing risks. To this end, HEI's Energy research program delivers high-quality, impartial science on the potential human exposures and potential health benefits and drawbacks associated with energy production and various energy technologies.

During the past year, the HEI Energy program published its first set of research reports, contributing to the scientific understanding of the nature, extent, and frequency of potential population exposures to air emissions, water quality changes, and noise from oil and gas operations across several US regions.

Capturing Cumulative Impacts

Social, environmental, and economic aspects of our lives have multiple effects – both good and bad – that can combine and accumulate over a person's lifetime. Considering these factors can help guide policy decisions intended to maximize beneficial exposures and minimize adverse ones. Capturing the full spectrum of factors that can affect human health – known as cumulative impact assessment – is a daunting undertaking.

A special report by HEI Energy, *Roadmap to Health: Assessing Adverse and Beneficial Environmental, Social, and Economic Cumulative Exposures*, offers practical approaches to make it more feasible to conduct cumulative impact assessments in a timely manner. The [report](#) and its accompanying [checklist](#) mark an important step toward realizing the promise of cumulative impact assessment for decision-making. HEI anticipates using the roadmap to assess cumulative exposures associated with data centers.

Oil and Gas Development in America's Communities

The Tracking Community Exposures and Releases (TRACER) Collaboration is a flagship research initiative of HEI Energy to advance understanding of how emissions from oil and gas development can result in population exposures of concern for health. Through the collaboration, researchers are measuring air pollution and noise exposures across multiple oil and gas regions of the United States and developing a new model to predict chemical emissions and population exposures. Findings from the TRACER Collaboration were featured in two webinar discussions from HEI's [Energy and Health series](#), and HEI also created a [Story Map](#) describing the collaboration for a general audience.

Research projects within this program are generating vital insights for the oil and gas industry; government bodies

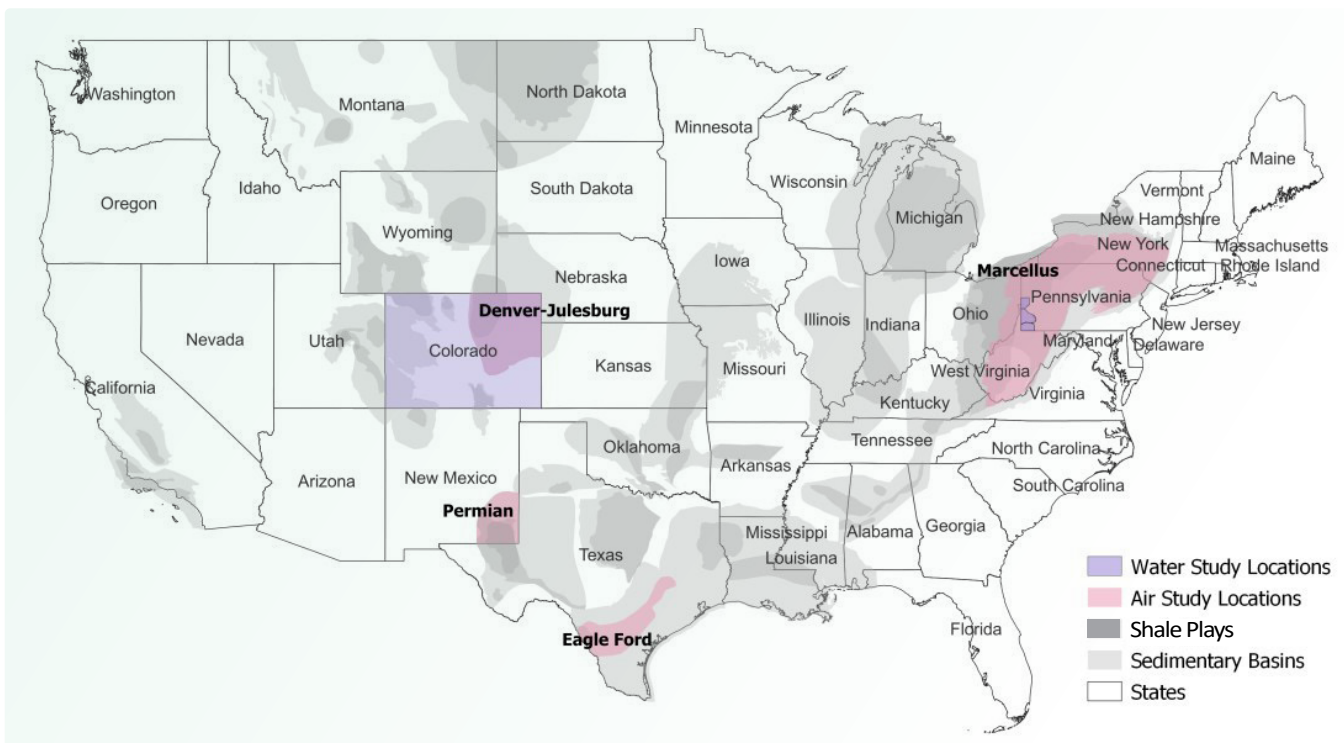
at the local, state, and national levels; the scientific community; and people living near oil and gas extraction and processing sites. In one [study](#) published in 2025, Jeffrey L. Collett, Jr. of Colorado State University and colleagues collected air quality and noise measurements at operations in Colorado, yielding insights on the points in the extraction process when the largest emissions occur. Their findings, shared in a [public meeting](#) attended by representatives from industry, government, academia, and local community groups, suggest that Colorado's 2,000-foot setback distance helps limit exposure levels of health concern for people who live near extraction sites. The model they developed to estimate emissions of hazardous air pollutants can be used to inform oil and gas operational practices and target interventions to reduce air quality impacts of oil and gas development.

To inform future research planning, HEI Energy reviews the scientific literature at its online [Literature Hub](#), in research briefs, and in peer-reviewed publications. HEI undertook one such review in response to growing interest in using produced water from oil and gas production for purposes such as crop irrigation and road treatments. The report, produced in collaboration with scientists from the US Geological Survey, synthesizes over 230 publications to illustrate the current state of knowledge and identify gaps.

Meredith Franklin of the University of Toronto led another TRACER Collaboration [study](#), focusing on distinguishing oil and gas activities from other sources of noise and airborne chemicals in Texas, New Mexico, and Colorado. The results document specific sources of pollutant emission spikes and show that oil and gas activity represents the dominant source of air pollution around the study sites. To our knowledge, this study represents the most detailed and extensive air quality investigation undertaken to date around New Mexico oil and gas operations. Lea Hildebrandt Ruiz of the University of Texas at Austin led a third [study](#), which assesses air pollutant and noise emissions in Texas and expands the TRACER model to the Marcellus region. The researchers shared their initial findings on activities

in the Eagle Ford region of Texas in a virtual [public meeting](#), describing how the concentration of air pollutants from oil and gas wells in the region varies by time of day and wind direction.

In addition to the TRACER Collaboration studies, other research efforts are ongoing to assess potential exposures related to water contamination in areas around oil and gas activities. One [study](#), led by Jennifer Baka of The Pennsylvania State University, documents a novel approach for understanding how oil and gas activities may influence drinking water quality, particularly in regions with long histories of hydrocarbon extraction. With it, the team found evidence of small increases in barium and strontium in some areas linked with leaks or spills.



Map of study locations

Global Initiatives

Applying science to
understand air pollution
and health while
strengthening capacity
around the world



Air pollution is the world's second-leading risk factor for early death, representing a global threat with far-reaching health consequences as well as social and economic impacts. HEI's Global Initiatives apply science to better understand the health impacts of air pollution in projects around the world. Working closely with local and regional partners, these efforts aim to inform global policy action and strengthen scientific capacity to complement ongoing in-country activities.

State of Global Air Report

HEI helps make air pollution data accessible to everyone through its State of Global Air reports, interactive website, videos, and factsheets – all available in multiple languages. This comprehensive resource analyzes exposures to fine particles, ozone, nitrogen dioxide, and household air pollution, and quantifies the burden of disease caused by air pollution in every country worldwide.

The *State of Global Air 2025 report*, published in partnership with the Institute for Health Metrics and Evaluation and the NCD Alliance, describes air pollution's role in contributing to about 1 in 8 deaths worldwide in 2023, with 90% of these deaths occurring in low- and middle-income countries. In addition to illuminating important drivers behind this ongoing health threat, the report spotlights success stories illustrating how countries are taking tangible steps to curb air pollution and generating tangible benefits for their populations. For the first time, the 2025 report included the impact of air pollution on dementia using a first-of-its-kind global dataset, in addition to impacts on other noncommunicable diseases, including respiratory and cardiovascular diseases, and impacts on neonatal and children's health.



Children playing soccer (Photo from the State of Global Air Report 2025)

Air Pollution in East Africa

HEI's initiatives in East Africa aim to communicate the health impacts of air pollution at the local level and strengthen regional capacity to integrate health as a pillar of air quality decision-making.

To support these goals and guide future research activities, HEI conducted a [scoping review](#), *Health Effects of Air Pollution in East Africa: Current Evidence and Priorities for Future Action*, which compiles available evidence from the region with a view to inform policy decisions. Building upon this report, HEI hosted a [workshop](#) in Kampala, Uganda, to identify priority research areas and near- and medium-term goals for research and action in the region.

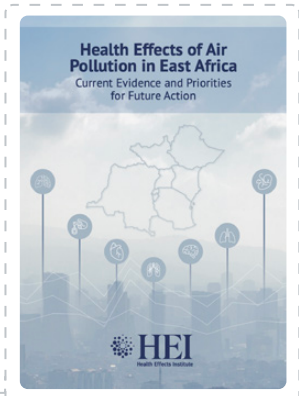
SUPPORTING REGIONAL COLLABORATION

HEI collaborates with the [Africa Clean Air Network](#) to help bridge the gap between air quality science and policy in Africa. The network launched a renewed vision for action at the third annual [CLEAN-Air Forum](#), held in July 2025 in Nairobi, Kenya. As a convening partner for the Forum, HEI worked with the organizing team to bring together nearly 400 experts and policymakers to advance collaborations and multiregional partnerships aimed at delivering scalable and evidence-driven clean air solutions for African cities.

Air Pollution in South Asia

As Asia has continued to suffer some of the highest burdens from air pollution, the continent has seen a growing public demand for action to improve air quality. HEI has led several research initiatives aimed at elucidating the drivers of air pollution in the region, calling attention to pollution problems as well as successful solutions.

A special [report](#) of the State of Global Air initiative describes the ongoing challenges outdoor and household air pollution poses in Central, South, and Southeast Asia. It also lays out a case for stronger regional coordination and knowledge exchange as well as national-level approaches for effective action to improve air quality.



Workshop in Kampala, Uganda, February 2025 (Photo: Owen Robert)

An HEI Expert Panel evaluated how air quality changed in Indian cities following the launch of India's National Clean Air Programme (NCAP) in 2019. Comparing data before and after the program's adoption, the [report](#), released in December, documents a rapid expansion in air quality monitoring infrastructure as well as provides a framework for understanding local variation in air quality and tracking air quality progress over time.

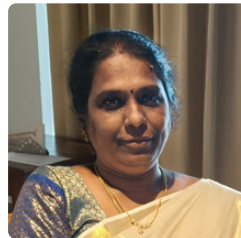
Locally led, on-the-ground research is crucial to advancing efforts to address the drivers of pollution and its related health burden in ways that are responsive to the needs and priorities of local populations. In 2025, HEI awarded two pilot research grants to support one-year projects focused on air pollution and health in South Asia. By supporting early-career local researchers, HEI seeks to not only advance the research aims of their projects but also strengthen research expertise.

In India, Vigneswari Aravindalochanan of the Sri Ramachandra Institute of Higher Education and Research will study the impact of early-life exposure to fine particle air pollution on childhood stunting in rural communities.

In Nepal, Akina Shrestha of the Kathmandu University School of Medical Sciences will deploy a low-cost sensor network to monitor air quality in rural areas and share the data with the public.



AKINA SHRESTHA
Kathmandu
University School of
Medical Sciences,
Nepal



**VIGNESWARI
ARAVINDALOCHANAN**
Sri Ramachandra
Institute of Higher
Education and Research,
India

FACILITATING GLOBAL CONVERSATIONS

HEI's [Science on the 7th](#) series brings together experts to discuss air quality and health in a live conversation. Interviews are livestreamed on the 7th of each month and recorded for future viewing, providing audiences with a range of perspectives and experiences on emerging research and issues. In 2025, Science on the 7th hosted 11 conversations with 15 guests from 10 different countries and covered topics ranging from AI and satellite technologies to the lived experiences of communities affected by air pollution.



Panel discussion on "Rethinking Narratives for Clean Air" at The University of Chicago Center Delhi, India (Photo: The University of Chicago Center, Delhi)

Sharing Knowledge, Expanding Collaboration

Convening colleagues and thought leaders from government, industry, and academia



The [2025 HEI Annual Conference](#), held May 4–6 in Austin, Texas, provided a lively forum for sharing emerging findings and discussing future directions to inform solutions for cleaner air. The event featured over 90 scientific posters and presentations, as well as deep-dive discussions in selected topics such as unleashing the power of AI for environmental health, advances in estimating disease burden, and evolving transportation technologies. Sessions highlighted timely issues, laid the groundwork for productive collaborations, and offered new perspectives on maximizing

insights gained through future research investments. The event was highlighted by a poignant and personal keynote address from Austin Mayor Kirk Watson.

The [2026 HEI Annual Conference](#) will be held April 26–28 in Chicago, Illinois. Sessions will feature research and discussions on air quality policy successes, air pollution’s role in neurodegenerative disease, strategies for incorporating remote observations into air pollution research, key questions around improving efficiency for freight and truck transportation, and more.



Attendees at the 2025 HEI Annual Conference

A Legacy of Enduring Impact

The impacts of HEI's reports stretch across decades in policy decisions, technology advances, and research priorities



Several milestones celebrated in 2025 remind us that the release of an HEI report is not an end, but a beginning. While the rigorous process of collecting, assessing, vetting, and interpreting the evidence might be over when a report is published, this marks only the first step in the process of putting that evidence to use. The impacts of HEI's Environment and Health reports stretch across decades and are seen in policy decisions, technology advances, research directions, and a strong workforce of talented scientists dedicated to advancing environmental health for the benefit of all.

Reanalysis Report 25th Anniversary

Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality, a [special report](#) issued in 2000, was applauded as a landmark independent review of a group of studies that examined the mortality risks linked with fine particle air pollution exposure. The impetus for the reanalysis came when lawmakers and industry groups raised questions about the reliability of the studies, which had formed the scientific basis for air pollution standards set in 1997. The reanalysis confirmed the studies' original findings through a careful, transparent review, while ensuring the privacy of study participants. The work strengthened the scientific foundation for understanding the health effects of fine particle pollution and established a model for the independent, impartial evaluation of policy-relevant science that is the hallmark of HEI's work today. [Listen to Douglas Dockery](#) reflect on what this report means 25 years later, and the work it inspired, at his presentation at our [Annual Conference in Austin, Texas](#).

Traffic Report 15th Anniversary

Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects, a [special report](#) issued in 2010, provided the most comprehensive and systematic review to date of the scientific literature on the potential health effects of exposure to vehicle emissions. The report outlined strong evidence for a causal relationship between exposure to traffic-related air pollution and exacerbation of asthma in children, as well as evidence suggesting a causal relationship between this type of air pollution and several other adverse health outcomes in both children and adults. The frequently cited review represented a seminal study and was followed by another [review](#) of traffic-related air pollution and health literature completed in 2022.



Douglas Dockery delivering his talk "Reflections on HEI Reanalysis Project 25 Years Later" at our annual conference

Fostering the Next Generation

Supporting the building blocks for the future of our field



Since our founding, HEI has viewed cultivating the next generation of talented researchers as critical to our mission of providing impartial science for a healthier environment. Solid science depends upon the curiosity, expertise, and integrity of the researchers who carry out the investigations that will yield needed insights. HEI's workforce development programs reflect this commitment and represent an important building block for the future of our field. In 2025, HEI was proud to support nine Summer Fellows and five Jane Warren Award recipients.

Summer Fellows are highly qualified undergraduate students who pursue a tailored environmental health project with a research mentor during a 10-week fellowship experience. HEI runs the program in partnership with the International Society of Exposure Science and the International Society for Environmental Epidemiology.



I feel much more capable and confident in my ability to conduct research. I was able to learn how to pivot quickly, strengthen my organizational skills, and become a stronger communicator this summer. My networking and coding skills have also improved tremendously. I am very thankful I was able to connect with numerous graduate students, professors, and EHS professionals.

— 2025 Fellow

2025 Fellows



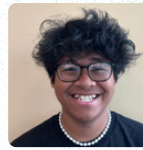
OLIVIA ALPIZAR

University of Massachusetts
Amherst



**SULAIMAN MATHEW-
WILSON**

Howard University



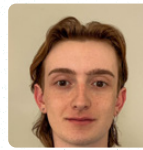
THET MON KYAW

University of Southern
California



**VALERIA MARTINEZ-
GUTIERREZ**

Syracuse University



PEYTON MORGAN

University of North Carolina
at Chapel Hill



ELLIOT LAZAROVA-WENG

UC Santa Cruz



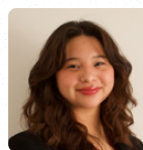
AUTUMN TALIAFERROW

Vassar College



AHMED SHAH

University of Rochester



KAYLA PORTILLO

Boston University

The 2025 program was supported by the American Chemistry Council and individual donations.

Jane Warren Award recipients are exemplary graduate students and postdocs in the environmental health field who receive funding to present their research as part of HEI's Annual Conference.

2025 Recipients



ALBERT KYI
The University of Texas
at Austin



REBECCA SUGRUE
University of California,
San Francisco



CHIRAG MANCHANDA
University of California,
Berkeley



SHIHAO ZHAI
The University of Texas
at Austin



KEVIN SCHICHLIN
University of North Carolina
at Chapel Hill

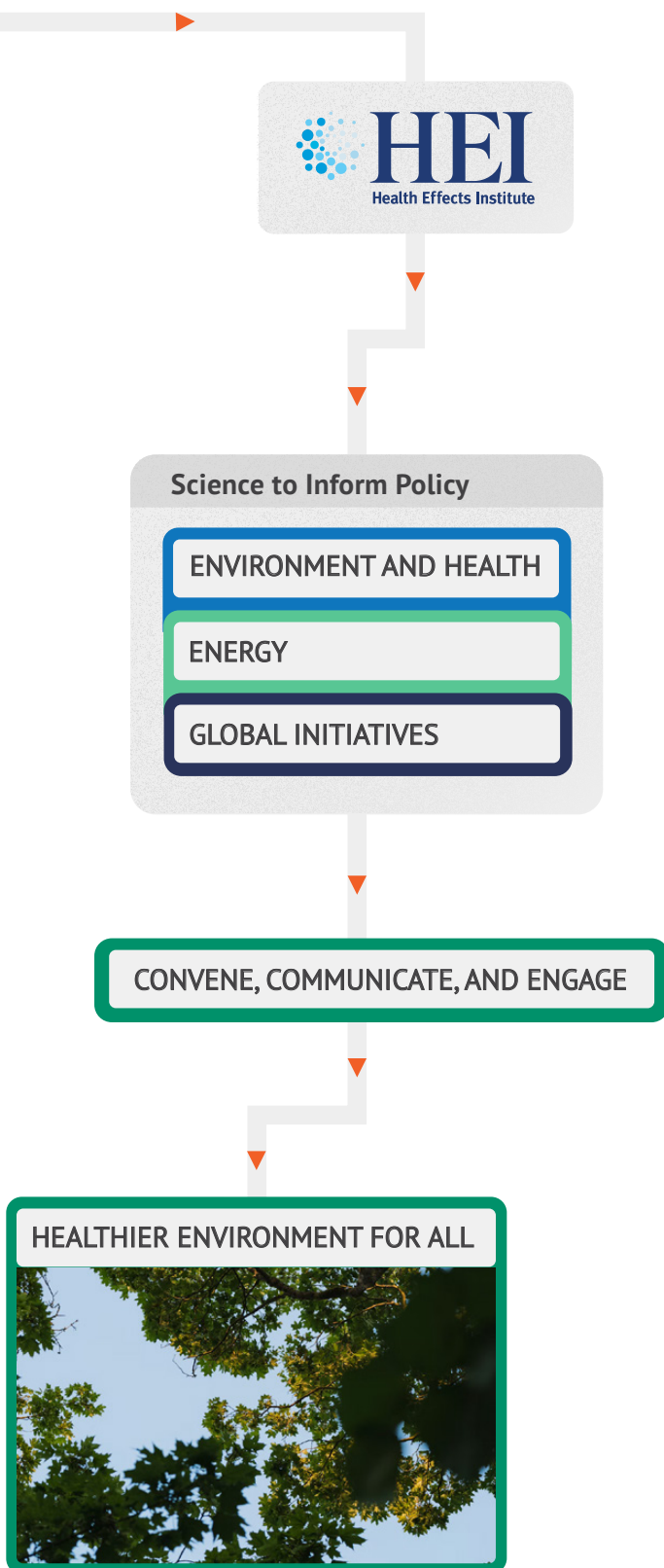


2025 Jane Warren awardees with HEI's Director of Science, Ellen Mantus

A Look Ahead

Building momentum to advance research for clean air and better health





2025 saw the launch of a new [Strategic Research Plan](#) that renews HEI’s vision for impartial science and sets a course for each of our program areas for 2025–2030. At the one-year mark, the priorities established in the plan are well underway, with new and continuing research programs supporting high-quality science to inform policy decisions. In the coming year, HEI’s three program areas – Environment and Health, Energy, and Global Initiatives – will build upon this momentum and advance research priorities to achieve a future of cleaner air and better health.

NEW RFAs

New research efforts will be starting in 2026 under two recent Requests for Applications. Studies funded under *Advancing Satellite-Derived Air Quality Data and Approaches for Use in Health Studies (RFA 25-1)* will quantify uncertainties in satellite remote sensing data and discuss their implications for use in exposure, epidemiological, and health assessment research. A promising early-career researcher selected for funding under the Walter A. Rosenblith New Investigator Award (*RFA 25-2*) will receive support for a project aligned with HEI’s research interests lasting up to three years.

HEI thanks all our sponsors and supporters for helping us achieve our mission of providing impartial science to inform decisions that foster a healthier environment for all.

HEI Research Program Sponsors

- US Environmental Protection Agency
- BMW of North America, LLC
- Cummins Inc.
- Daimler North America Corporation
- Detroit Diesel Corporation
- Ford Motor Company
- General Motors Company
- Hino Motors, Ltd.
- American Honda Motor Company, Inc.
- Hyundai Motor North America
- Isuzu Motors, Ltd.
- Jaguar Land Rover North
- Mitsubishi Motors Corporation
- Nissan Motor Company, Ltd.
- North American Subaru, Inc.
- Stellantis
- Toyota Motor Corporation
- Volkswagen of America, Inc.
- Volvo Cars of North America, LLC
- Volvo Group Trucks

Other Supporters

- American Petroleum Institute
- ExxonMobil
- Breakthrough Energy

HEI Summer Fellowship Program

- American Chemistry Council
- Burroughs Wellcome Fund
- Individual Donors

HEI Global Initiatives

- Clean Air Fund
- UNICEF
- Coefficient Giving
- World Bank

Committees

We appreciate all committee members who served for all or part of 2025.

Research Committee

DAVID A. SAVITZ, CHAIR

Professor of Epidemiology, School of Public Health, and Professor of Obstetrics and Gynecology and Pediatrics, Alpert Medical School, Brown University, USA

BENJAMIN BARRATT

Professor, Environmental Research Group, School of Public Health, Imperial College London, United Kingdom

DAVID C. DORMAN

Professor, Department of Molecular Biomedical Sciences, College of Veterinary Medicine, North Carolina State University, USA

CHRISTINA H. FULLER

Associate Professor, School of Environmental, Civil, Agricultural and Mechanical Engineering, University of Georgia College of Engineering, USA

MARIANNE HATZOPOULOU

Professor, Civil and Mineral Engineering, University of Toronto, Research Chair in Transport Decarbonization and Air Quality, Canada

HEATHER A. HOLMES

Associate Professor, Department of Chemical Engineering, University of Utah, USA

NEIL PEARCE

Professor of Epidemiology and Biostatistics, London School of Hygiene and Tropical Medicine, United Kingdom

EVANGELIA (EVI) SAMOLI

Professor of Epidemiology and Medical Statistics, Department of Hygiene, Epidemiology and Medical Statistics, School of Medicine, National and Kapodistrian University of Athens, Greece

ALEXANDRA M. SCHMIDT

Professor of Biostatistics, School of Population and Global Health, McGill University, Canada

NEETA THAKUR

Associate Professor of Medicine, University of California, San Francisco, USA

GREGORY WELLENIUS

Beverly A. Brown Professor for the Improvement of Urban Health and Director, Center for Climate and Health, Boston University School of Public Health, USA

Review Committee

MELISSA J. PERRY, CHAIR

Dean, College of Public Health, George Mason University, USA

SARA D. ADAR

Professor of Epidemiology and Global Public Health, Department of Epidemiology, University of Michigan School of Public Health, USA

KIROS T. BERHANE

Cynthia and Robert Citrone-Roslyn and Leslie Goldstein Professor and Chair, Department of Biostatistics, Mailman School of Public Health, Columbia University, USA

ULRIKE GEHRING

Associate Professor, Institute for Risk Assessment Sciences, Utrecht University, Netherlands

MICHAEL JERRETT

Professor, Department of Environmental Health Sciences, Fielding School of Public Health, University of California, Los Angeles, USA

JANA B. MILFORD

Professor Emerita, Department of Mechanical Engineering and Environmental Engineering Program, University of Colorado Boulder, USA

JENNIFER L. PEEL

Professor of Epidemiology, Department of Environmental and Radiological Health Sciences, Colorado State University, and the Colorado School of Public Health, USA

JOHN VOLCKENS

Professor, Department of Mechanical Engineering, Walter Scott Jr. College of Engineering, Colorado State University, USA

SCOTT WEICHTHAL

Professor, Department of Epidemiology, Biostatistics, and Occupational Health, School of Population and Global Health, McGill University, Canada

Community Health and Environmental Research Initiatives Advisory Council

MARIA HARRIS

Senior Scientist, Environmental Defense Fund, USA

MYCHAL JOHNSON

Co-founder, South Bronx Unite, USA

YUKYAN LAM

Research Director and Senior Scientist, Tishman Environment and Design Center, The New School, USA

BETO LUGO MARTINEZ

Community Grassroots Organizer, Rise4EJ, USA

LESLIAM QUIRÓS-ALCALÁ

Assistant Professor, Johns Hopkins Bloomberg School of Public Health, USA

ELIZABETH SCHEEHLE

Research Division Chief, California Air Resources Board, USA

SHERRI WHITE-WILLIAMSON

Executive Director, Environmental Justice Community Action Network, USA

Community Health and Environmental Research Initiatives Research Committee

JAYAJIT CHAKRABORTY

Professor and Mellichamp Chair in Racial Environmental Justice, Bren School of Environmental Science and Management, University of California, Santa Barbara, USA

MELISSA GONZALES

Chair and Professor, Department of Environmental Health, Tulane University School of Public Health and Tropical Medicine, USA

CHRISTINA H. FULLER

Associate Professor, School of Environmental, Civil, Agricultural and Mechanical Engineering, University of Georgia College of Engineering, USA

NOELLE ECKLEY SELIN

Professor, Institute for Data, Systems and Society and Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, USA

MADELEINE SCAMMELL

Associate Professor of Environmental Health, Boston University School of Public Health, USA

NEETA THAKUR

Associate Professor of Medicine, University of California, San Francisco, USA

LINDA VALERI

Assistant Professor of Biostatistics, Columbia University, USA

Energy Research Committee

GEORGE HORNBERGER, CHAIR

Distinguished Professor Emeritus, Vanderbilt University, USA

ALFRED EUSTES

Associate Professor Emeritus, Petroleum Engineering Department, Colorado School of Mines, USA

JULIA HAGGERTY

Associate Professor of Geography, Department of Earth Sciences, Montana State University, USA

KIRSTEN KOEHLER

Professor, Department of Environmental Health and Engineering, Bloomberg School of Public Health, Johns Hopkins University, USA

CHRISTOPHER PACIOREK

Adjunct Professor and Research Computing Consultant, Department of Statistics, University of California, Berkeley, USA

ARMISTEAD (TED) G. RUSSELL

Howard T. Tellepsen Chair and Regents Professor of Civil and Environmental Engineering, Georgia Institute of Technology, USA

PETER S. THORNE

University of Iowa Distinguished Chair and Professor, Department of Occupational and Environmental Health, University of Iowa College of Public Health, USA

YIFANG ZHU

Professor of Environmental Health Sciences, UCLA Fielding School of Public Health, University of California, Los Angeles, USA

Energy Review Committee

ISABELLE COZZARELLI, CHAIR

*Research Hydrologist Emeritus, USGS
Geology, Energy, and Minerals Science Center,
USA*

JIM CROMPTON

*Professor of Practice, Petroleum Engineering
Department, Colorado School of Mines, USA*

ALBERT PRESTO

*Director, Center for Atmospheric Particle
Studies, and Research Professor, Department
of Mechanical Engineering, Carnegie Mellon
University, USA*

CHRISTINE WIEDINMYER

*Director of UCAR Community Programs,
University Corporation for Atmospheric
Research (UCAR), Boulder, Colorado, USA*

JUN WU

*Professor of Environmental and Occupational
Health, University of California, Irvine, USA*

Global Initiatives Oversight Committee

JONATHAN M. SAMET, CHAIR

*Chair and Professor of Epidemiology
and Environmental and Occupational
Health, Colorado School of Public
Health, USA*

KALPANA BALAKRISHNAN

*Associate Dean (Research), Department
of Environmental Health Engineering,
Sri Ramachandra Institute of Higher
Education and Research, India*

JILL BAUMGARTNER

*Professor, Departments of Equity, Ethics,
and Policy/Epidemiology, Biostatistics and
Occupational Health, School of Population
and Global Health, McGill University, Canada*

KIROS T. BERHANE

*Cynthia and Robert Citrone-Roslyn and
Leslie Goldstein Professor and Chair,
Department of Biostatistics, Mailman School
of Public Health, Columbia University, USA*

MICHAL KRZYZANOWSKI

*Visiting Professor, Imperial College London,
United Kingdom*

ABDUS SALAM

*Professor, Department of Chemistry,
University of Dhaka, Bangladesh*

CARADEE WRIGHT

*Chief Specialist Scientist, South African
Medical Research Council, South Africa*

Ongoing Studies and Reports Under Review and in Press

Status as of December 31, 2025

Accountability

***Environmental and health benefits of mobile source and electricity generating unit policies to reduce particulate pollution.**

Stefanie Ebelt, Emory University, USA; David Rich, University of Rochester, USA

Managing the traffic-related air pollution effects of urban warehousing near historically marginalized communities: A scenario analysis of technology and land use-based strategies.

Anne Goodchild, University of Washington, USA

Efficacy of vehicle emission control interventions in ameliorating air pollution exposure and health burdens in marginalized communities.

Daniel Horton, Northwestern University, USA

***Accounting for the health benefits of air pollution regulations in China, 2008–2020.**

Patrick L. Kinney, Boston University, USA

Impacts of zero-emission truck regulations on tailpipe and non-tailpipe air pollution exposures and health risks in Southern California communities.

Jiachen Zhang, University of Southern California, USA

COVID-19, Air Pollution, and Health

***Ambient air pollution and COVID-19 in California.**

Michael Kleeman, University of California, Davis, USA

Energy

Air Emissions and Noise Exposure

***Predictive, source-oriented modeling and measurements to evaluate community exposures to air pollutants and noise from unconventional oil and gas development.**

Lea Hildebrandt Ruiz, University of Texas at Austin, USA

*Report in the HEI review process as of December 31, 2025

Air Quality Trends

***Long-term criteria and toxic pollutants trends and community exposures over the Marcellus Shale region in the United States.**

Bok Haeng Baek, George Mason University, USA

***Trends in Marcellus-Utica shale regional air quality due to unconventional oil and gas development.**

Jeremy Gernand, The Pennsylvania State University, USA

***Air quality trends in Texas and Colorado associated with unconventional oil and gas development.**

Gunnar Schade, Texas A&M University, USA

Water-Related Exposure

***Hydrocarbon extraction and risk to groundwater in Pennsylvania: Part 2. An analysis of water quality in the oldest hydrocarbon basin in the USA.**

Jennifer Baka, The Pennsylvania State University, USA

***Assessing the effects of unconventional oil and gas development on community water sources.**

Joseph Ryan, University of Colorado Boulder, USA

***A groundwater modeling framework for elucidating community exposures across the Marcellus region to contamination associated with oil and gas development.**

James E. Saiers, Yale University, USA

Global Initiatives

Modeling long-term PM_{2.5} exposure and its impact on premature coronary artery disease: A pooled analysis of multiple cohorts in India.

Santu Ghosh, St. John's Research Institute, India

Traffic Pollution and Noise

BREATHE: Bridging realms for equitable assessment of TRAP health effects.

Michael Brauer, University of British Columbia, Canada

***Traffic-related air pollution and birth weight: The roles of noise, placental function, green space, physical activity, and socioeconomic status (FRONTIER).**

Payam Dadvand and Jordi Sunyer, Barcelona Institute for Global Health (ISGlobal), Spain

***Improved assessment and characterization of traffic-related particulate emissions (IMPACT).**

Greg Evans, University of Toronto, Canada

***Intersections as hot spots: Assessing the contribution of localized nontailpipe emissions and noise on the association between traffic and children's health.**

Meredith Franklin, University of Southern California, USA

Traffic-related air pollution, lipoproteins, and cardiovascular disease risk in the Vitamin D and Omega-3 trial (VITAL).

Heike Gibson, Harvard University, USA

***Assessing the impact of nonexhaust emissions from traffic on the asthmatic airway.**

Chris Griffiths, Queen Mary University of London, United Kingdom

Roadmap for MHDV fleet renewal: Maximizing health and environmental justice benefits in air pollution-burdened warehouse-adjacent communities.

Daniel Horton, Northwestern University, USA

Predicting cardiometabolic health and air pollution in future transportation landscapes using agent-based models.

Christoph Knote, University of Augsburg, Germany

Novel exposures, birth outcomes, and social vulnerability in a changing transportation landscape.

Suzanne Paulson, University of California, Los Angeles, USA

Wildland Fires and Agricultural Burning

***Australian fires and perinatal health risks.**

Michelle Bell, Yale University, USA

***Contributions of prescribed fire and agricultural burning to air quality and health.**

Talat Odman, Georgia Institute of Technology, USA

Walter A. Rosenblith New Investigator Award

***Air pollutants and the gut microbiota and metabolome during early life: Implications for childhood obesity.**

Tanya Alderete, University of Colorado, USA

***Urban air and noise pollution in sub-Saharan Africa: A study of prenatal exposures, birth outcomes, and sleep disturbances in infants.**

Raphael Arku, University of Massachusetts, Amherst, USA

Air pollution source impacts at fine scales for long-term regulatory accountability and exposure assessment.

Lucas R.F. Henneman, George Mason University, USA

Designing optimal policies for reducing air pollution-related health inequities.

Rachel Nethery, Harvard University, USA

What's in the air? Engaging Native American youth in the Northern Plains to reduce air pollution.

Ornelas Van Horne, UCLA Fielding School of Public Health, USA

A prospective cohort study of air pollution and postpartum depression.

Amelia Wesselink, Boston University, USA

2025 Publications and Resources

Five-Year Plan

April 2025
Strategic Research Plan 2025–2030
Health Effects Institute

Environment and Health

February 2025
Research Report 223
Impacts of Vehicle Emission Regulations and Local Congestion Policies on Birth Outcomes Associated with Traffic Air Pollution
Perry Hystad, Oregon State University, USA

March 2025
Research Report 224
Effect of Air Pollution Reductions on Mortality During the COVID-19 Lockdowns in Early 2020
Kai Chen, Yale School of Public Health, USA

Research Report 225
Air Pollution Exposure, Prefrontal Connectivity, and Emotional Behavior in Early Adolescence
Megan Herting, University of Southern California, USA

Research Report 226
Comparison of Long-Term Air Pollution Exposure from Mobile and Routine Monitoring, Low-Cost Sensors, and Dispersion Models
Gerard Hoek, Utrecht University, Netherlands

May 2025
Research Report 227
Investigating the Consequences of Measurement Error of Gradually More Sophisticated Long-Term Personal Exposure Models in Assessing Health Effects: The London Study (MELONS)
Klea Katsouyanni, Imperial College London, United Kingdom

August 2025

Research Report 228

Optimizing Air Pollution Exposure Assessment with Application to Cognitive Function

Lianne Sheppard, University of Washington, USA

October 2025

Research Report 229

Accounting for Mobility in Air Pollution Exposure Estimates in Studies on Long-Term Health Effects

Kees de Hoogh, Swiss Tropical and Public Health Institute, Switzerland

Research Report 230

REACH-OUT: Race, Ethnicity, and Air Pollution in COVID-19 Hospitalization Outcomes

Jeanette Stingone, Columbia University Mailman School of Public Health, USA

December 2025

Research Report 234

Robust Statistical Approaches to Understanding the Causal Effect of Air Pollution Mixtures

Joseph Antonelli, University of Florida, USA

Research Report 235

How Do Household Energy Interventions Work?

Jill Baumgartner and Sam Harper, McGill University, Canada

Energy

September 2025

Special Report 2

Roadmap to Health: Assessing Adverse and Beneficial Environmental, Social, and Economic Cumulative Exposures

HEI Special Panel on Cumulative Impact Assessment

December 2025

Research Report 231

Assessing Source Contributions to Air Quality and Noise in Unconventional Oil Shale Plays

Meredith Franklin, University of Toronto, Canada

Research Report 232

Measuring and Modeling Air Pollution and Noise Exposure Near Unconventional Oil and Gas Development

Jeffrey L. Collett, Jr., Colorado State University, USA

Research Report 233, Part 1

Using Geoscientific Analysis and Community Engagement to Analyze Exposures to Potential Groundwater Contamination Related to Hydrocarbon Extraction in Southwestern Pennsylvania

Jennifer Baka, The Pennsylvania State University, USA

Global Initiatives

January 2025

State of Global Air Report

Trends in Air Quality and Health Impacts: Insights from Central, South, and Southeast Asia

April 2025

Scoping Review Report

Health Effects of Air Pollution in East Africa: Current Evidence and Priorities for Future Action

October 2025

State of Global Air 2025 Report

A Report on Air Pollution and Its Role in the World's Leading Causes of Death

December 2025

Assessment of Changes in Air Quality in Indian Cities Since the Launch of the National Clean Air Programme

Papers in Peer-Reviewed Journals

HEI staff names are in boldface.

Sand and Dust Storms: a Growing Global Health Threat Calls for International Health Studies to Support Policy Action

*Tiantian Li et al.; **Pallavi Pant** is a co-author*

Lancet Planetary Health, January 2025

Editorial: Science to Foster the WHO Air Quality Guideline Values

Hanna Boogaard, Pallavi Pant, and Nino Künzli
International Journal of Public Health, January 2025

Seizing the Policy Opportunities for Health- and Equity-Improving Energy Decisions

Wei Peng et al.; Donna Vorhees is a co-author
One Earth Journal, February 2025

Pathways for Potential Exposure to Onshore Oil and Gas Wastewater: What We Need to Know to Protect Human Health

Ayusha Ariana, Isabelle Cozzarelli, Cloelle Danforth, Bonnie McDevitt, Anna Rosofsky, and Donna Vorhees
GeoHealth, April 2025

Transport-Sectoral Solutions for Air Pollution and Health

Hanna Boogaard
Technical Brief, World Health Organization, July 2025

Open Air Quality Data Platforms for Environmental Health Research and Action

Colleen Marciel Rosales et al.; Pallavi Pant is a co-author
Current Environmental Health Reports, July 2025

Mobile Monitoring of Air Pollution – A Position Paper on Use Cases, Good Practices, Challenges, and Opportunities

Jules Kerckhoffs et al.; Allison Patton is a co-author
Environment International, August 2025

From Global to Local: Perspectives on Strengthening Air Quality and Health Capacity in Low- and Middle-Income Countries

Victor Nthusi, Abinaya Sekar, and Pallavi Pant
EM Magazine, October 2025

Systematic Review and Meta-analysis on Short-Term Concentrations of Ambient Ultrafine Particles and Natural, Cardiovascular and Respiratory Mortality

Marie L. Bergmann et al.; Hanna Boogaard is a co-author
Environmental Research, December 2025

CLEAN-Air Forum 2025: Fostering Africa-Led Partnerships for Clean Air Solutions

Deo Okure, Siya Mkhize, and Pallavi Pant
Clean Air Journal, December 2025

Financial Summary 2024–2025

Statements of Financial Position

Assets	June 30	
	2025	2024
	\$	\$
Cash and cash equivalents	2,436,320	2,398,811
Restricted cash	148,066	148,009
Investments	6,476,527	3,491,740
Contributions receivable	758,233	843,086
Unbilled incurred costs on grants	-	6,427,196
Prepaid expenses	122,590	72,853
Office equipment, office furniture and fixtures, and leasehold improvements, net	17,334	22,288
Operating lease right-of-use assets	201,488	591,659
Finance lease right-of-use assets	6,779	16,947
Total assets	\$ 10,167,337	\$ 14,012,589
Liabilities and net assets		
Liabilities		
Contracted research payables	1,957,551	1,393,071
Accrued contracted research	1,190,096	2,271,638
Deferred revenue	260,823	309,084
Other accounts payable and accruals	634,025	964,165
Operating lease obligations	234,092	682,510
Finance lease obligations	7,068	17,425
Total liabilities	4,283,655	5,637,893
Net assets		
Without donor restrictions	2,085,944	1,979,699
With donor restrictions	3,797,738	6,394,997
	5,883,682	8,374,696
Total net assets	5,883,682	8,374,696
Total liabilities and net assets	\$ 10,167,337	\$ 14,012,589

The HEI Financial Statement and the CBIZ CPAs P.C. Independent Auditors' Report may be obtained by contacting Jacqueline C. Rutledge at jrutledge@healtheffects.org

Statement of Activities

	Years Ended June 30	
	2025	2024
	\$	\$
Revenues and support		
EPA grants for the Health Effects of Air Pollution Program	2,223,301	4,304,445
EPA contracts for Energy Research	5,140,727	2,380,844
Other industry contributions	5,250,886	5,269,284
Other nonfederal grant and contract revenue	479,828	870,345
Other revenues	157,326	144,033
Total revenues and support	\$ 13,252,068	\$ 12,968,951
Expenses		
Research programs		
Research studies	4,820,307	5,206,353
Research planning and study selection	816,108	1,022,531
Scientific study management	320,416	380,359
Scientific study review	403,386	478,353
Scientific publication and communication	2,148,148	1,520,676
	8,508,365	8,608,272
Special scientific projects		
Energy research	3,797,738	6,394,997
Global health science	876,848	1,008,781
Total scientific expense	5,301,726	4,118,982
Administration	1,932,991	2,426,173
Total expenses	15,743,08	15,153,427
Net increase (decrease) in net assets	(2,491,014)	(2,184,476)
Net assets at beginning of year	8,374,696	10,559,172
Net assets at end of year	\$ 5,883,682	\$ 8,374,696

Officers and Staff

HEI Board of Directors

RICHARD A. MESERVE, CHAIR

Senior of Counsel, Covington and Burling LLP; President Emeritus, Carnegie Institution for Science; former Chair, US Nuclear Regulatory Commission, USA

HOMER A. BOUSHEY

Emeritus Professor of Medicine, University of California San Francisco, USA

JO IVEY BOUFFORD

Clinical Professor of Global Health and Pediatrics, New York University, USA

STEPHEN CORMAN

President, Corman Enterprises, USA

MARTHA J. CRAWFORD

Operating Partner, Macquarie Asset Management, USA

ANA V. DIEZ ROUX

Dana and David Dornsife Dean and Distinguished University Professor of Epidemiology, Dornsife School of Public Health, Drexel University; Director, Drexel Urban Health Collaborative, USA

MICHAEL J. KLAG

Dean Emeritus and Second Century Distinguished Professor, Johns Hopkins Bloomberg School of Public Health, USA

ALAN I. LESHNER

CEO Emeritus, American Association for the Advancement of Science, USA

MARTHA E. RUDOLPH

Environmental Attorney, Former Director of Environmental Programs, Colorado Department of Public Health and Environment, USA

CATHERINE L. ROSS

Regents' Professor Emerita, City and Regional Planning and Civil and Environmental Engineering, Georgia Institute of Technology; Chairman of the Board of Directors of the Auto Club Group, American Automobile Association, USA

KAREN C. SETO

Frederick C. Hixon Professor of Geography and Urbanization Science, Yale School of the Environment, Yale University, USA

JARED L. COHON

*President Emeritus and Professor, Civil and Environmental Engineering and Engineering and Public Policy, Carnegie Mellon University, USA
In Memoriam 1947–2024*

Staff and Consulting Scientists

ELENA CRAFT

President and CEO

ELLEN K. MANTUS

Director of Science

DONNA J. VORHEES

Director of HEI Energy

THOMAS J. CHAMPOUX

Director of Science Communications

JACQUELINE C. RUTLEDGE

Director of Finance and Administration

EMILY ALDEN

Corporate Secretary

AMY ANDREINI

Senior Science Communications Specialist

HANNA BOOGAARD

Consulting Principal Scientist

JACKI COLLINS

Senior Staff Accountant

DAN CROUSE

Senior Scientist

CLOELLE DANFORTH

Senior Scientist

PHILIP J. DEMARCO

Controller

KRISTIN C. ECKLES

Senior Editorial Manager

HLINA KIROS

Research Assistant

LISSA MCBURNEY

Senior Science Administrator

SAMANTHA MILLER

Research Assistant

VICTOR NTHUSI

Consulting Research Fellow

PALLAVI PANT

Head of Global Initiatives

ALLISON P. PATTON

Senior Scientist

YASMIN ROMITTI

Staff Scientist

ANNA ROSOFSKY

Senior Scientist and Community Health and Environmental Research Initiatives Lead

ABINAYA SEKAR

Consulting Research Fellow

ROBERT SHAVERS

Operations Manager

EVA TANNER

Staff Scientist

ALEXIS VASKAS

Digital Communications Manager

DANIEL S. GREENBAUM

President Emeritus, In Memoriam 1952–2024

ROBERT M. O'KEEFE

Vice President Emeritus

ANNEMOON M. VAN ERP

Deputy Director of Science Emerita

ARCHIBALD COX

Founding Chair, 1980–2001

DONALD KENNEDY

*Vice Chair Emeritus, 1980–2003;
Editor-in-Chief Emeritus, Science*

Report Credits

WRITING

**Anne Frances Johnson,
Creative Science Writing**

WEBSITE SUPPORT

**Diana Sterling, Charles River Web
Alexis Vaskas**

PROJECT MANAGEMENT AND EDITING

**Amy Andreini and Tom Champoux
with additional review by
HEI colleagues Elena Craft, Kristin
Eckles, Ellen Mantus, Pallavi Pant,
Donna Vorhees, and
Jacqueline Rutledge**

ART DIRECTION/DESIGN

Studio Ping Pong

EDITORIAL REVIEW

Hope Green



**Expanding Our Vision for
a Healthier Environment**

2025 HEI Annual Report