

HEI Asia Workshops Focus on Air Pollution's Global Health Impact

Two recent workshops in India and China drew large crowds when HEI and partner organizations presented the latest air pollution results from the Global Burden of Disease 2010 project (GBD 2010), a rigorously conducted, peer-reviewed analysis of major global health risks that involved multiple institutions and hundreds of investigators worldwide. A broad spectrum of prominent scientists from the medical and air pollution research communities and from regulatory agencies attended the meetings, which were widely covered by the media (see HEI in the News, page 4). HEI Principal Scientist Aaron Cohen co-led the air pollution analyses, to which a number of HEI investigators and committee members contributed.

The first meeting, held in February at the India Habitat Center in Delhi, was cohosted by HEI in collaboration with the Centre for Science and the Environment and the Indian Council of Medical Research and was sponsored by the Oak Foundation. For the second workshop, held in March at the Wenjin Hotel in Beijing, China, HEI partnered with Tsinghua University; this meeting was sponsored by the China Sustainable Energy Program of the Energy Foundation.

Interest in the workshops was high, as severe air pollution episodes have become increasingly common in Asia, and the GBD 2010 study findings, released in December, indicate that the effects of air pollution on public health are much larger than previously thought. While other factors, such as dietary risks and smoking, ranked higher, among the many risk factors studied on a country-specific basis, outdoor air pollution ranked as the fifth most frequent contributor to mortality in India, where in 2010 air pollution was estimated to contribute to more than 627,000 deaths and 17.7 million years of healthy life lost. In China that same year, the GBD study

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Expert Panel Named to Review Diesel Epidemiology Studies

In March, HEI announced the leadership and members of the HEI Diesel Epidemiology Panel. During the next year and a half, this multidisciplinary expert panel will evaluate the strengths and limitations of current epidemiologic evidence for use in estimating quantitatively the cancer risks associated with exposure to diesel exhaust (i.e., quantitative risk assessment, or QRA). The HEI Board of Directors formed the panel in response to requests from the institute's sponsors in government and industry, selecting its nine members (see sidebar, page 3) from more than 80 nominations submitted by the sponsors and the scientific community.

HEI first explored the issues of diesel epidemiology in a 1999 Special Report, *Diesel Emissions and Lung Cancer: Epidemiology and Quantitative Risk Assessment*. That report concluded that the evidence then available was not suitable for use in QRA. Since that time, however, several new studies examining the association between diesel emissions and lung cancer have been published, including

The panel brings together distinguished expertise in biostatistics, epidemiology, diesel engines and emissions, exposure assessment, occupational medicine, and risk assessment.

cohort studies of miners who worked in non-metal mines in the United States (the National Cancer Institute/National Institute for Occupational Safety and Health Study) and of U.S. trucking industry employees. These studies sought to estimate exposures more precisely than had been possible in the past. They also contributed to the June 2012 diesel exhaust hazard assessment by the International Agency for Research on Cancer and have raised the question for the U.S. Environmental Protection Agency and other agencies as to whether they should consider QRA for diesel exhaust. The new HEI Diesel Epidemiology Project is an effort, based on these new studies, to revisit and update HEI's 1999 assessment.

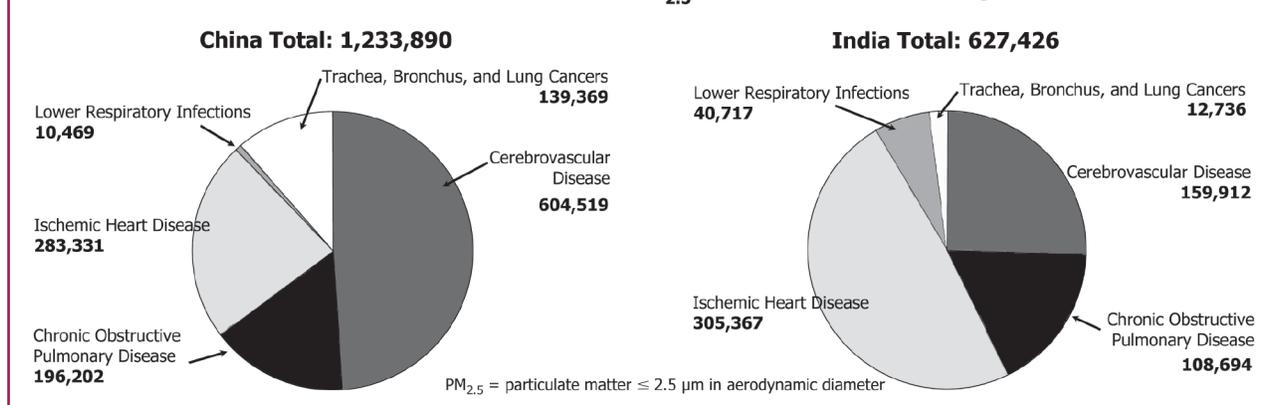
The panel brings together distinguished expertise in biostatistics, epidemiology, diesel engines and emissions, exposure assessment, occupational medicine, and risk assessment. After an organizational meeting this spring and a presentation on the panel's work by Daniel

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Deaths Attributable to Ambient PM_{2.5} Pollution in 2010, by Cause



SOURCE: INSTITUTE FOR HEALTH METRICS AND EVALUATION

GLOBAL BURDEN (Continued from page 1)

ranked outdoor air pollution fourth among the leading contributors to mortality and estimated that air pollution was a factor in more than 1.2 million deaths and more than 25 million years of healthy life lost. The analysis found that reducing the burden of disease due to air pollution in Asia will require significant decreases in the high levels of air pollution in those regions.

The study also identified household air pollution from the burning of solid fuels for cooking and heating as being responsible for a substantial burden of disease in low- and middle-income countries. Globally, indoor air pollution generated by the burning of solid fuels in homes was found to contribute to more than 3.5 million deaths in 2010.

Overall, GBD 2010 investigators estimated that more than two-thirds of the worldwide

health burden stemming from ambient air pollution is found in the developing countries of South, East, and Southeast Asia. “The study’s findings ... suggest that a large burden of disease in many parts of the world is attributable to particulate matter pollution, which is substantially higher than estimated in previous analyses,” the British medical journal *The Lancet* reported in December.

The Global Burden of Disease project previously published estimates in 1990, 1999–2002, and 2004, but it has since widely expanded the scope of its work. GBD 2010 involved almost 500 scientists in 50 countries and was led by the Institute for Health Metrics and Evaluation at the University of Washington in Seattle, along with its partner institutions: the World Health Organization; the University of Queensland, Australia;

Johns Hopkins University; and Harvard University. The 2010 project applied consistent methods to the largest global database ever assembled to estimate risks of premature mortality and contributions to global disease and ill health from a wide variety of risk factors, including smoking, diet, alcohol, HIV-AIDS, and household and outdoor air pollution. (Complete results are available at www.thelancet.com/themed/global-burden-of-disease.) The India- and China-specific analyses were calculated from this larger global effort. 

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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 a list of published HEI Research Reports are available on request or from the Web site.

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2012 Annual Report Now Available

The 2012 Annual Report describes HEI’s unique ability to work with government, industry, the environmental community, and scientists to produce impartial, relevant science that can be trusted for use in often-controversial public policy decisions. The report also describes many strong scientific contributions HEI made this past year, including the publication of recent studies on multipollutants and air pollution hot spots, the effects of diesel emissions on human health, and innovative efforts to measure the health outcomes of regulatory actions and other interventions.

Download the report at <http://pubs.healtheffects.org/view.php?id=395>. 



HEI IN THE NEWS (Continued from page 4)

Global Times

“Air Pollution Sped Death of 1.2 Million in China” (April 2, 2013)

The *Global Times*, an English-language Chinese newspaper published by the *People’s Daily*, commented: “The report by the

Health Effect Institute, a nonprofit organization, makes fine particle air pollution the fourth leading cause of premature death in the country that year. ... A poor diet, high blood pressure, and smoking were the top three [contributors] to premature death in the country in 2010.” 

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Progress and Priorities

In February, HEI sponsors and Research Committee members held their annual meeting in Boston to share perspectives on the institute's recent achievements and ongoing projects and to discuss priorities for future work. Among the agenda topics were HEI's efforts to improve its communications strategy and the progress it has made in implementing its Strategic Plan for 2010 through 2015. 

PHOTOS BY PAUL SCHNAITACHER



Mel Peffers, U.S. Environmental Protection Agency (center), with James Swenberg and Sylvia Richardson, both of the HEI Research Committee.



Joe Somers, U.S. Environmental Protection Agency, and Rashid Shaikh, HEI director of science.



HEI Vice President Robert O'Keefe with Michael Spallek, representing Volkswagen.



Howard Feldman, American Petroleum Institute.



Richard Smith, HEI Research Committee, and Andre Welch, Ford.

DIESEL EPIDEMIOLOGY (Continued from page 1)

Krewski at HEI's Annual Conference in April, the panel is taking the following steps:

- Set clear a priori criteria for assessing the suitability of the studies for QRA.
- Review in detail the newest published studies, as well as critiques published to date.
- Convene a public workshop to which the original investigators, scientific investigators who have reviewed the studies, and other experts are invited to discuss the strengths and limitations of the studies.
- Determine the panel's initial conclusions on the suitability of the studies and/or the need for the panel to access and conduct additional analyses in the original data sets.
- Prepare a report on its findings, which will be subject to independent and rigorous peer review before publication. 

HEI Diesel Epidemiology Panel

Daniel Krewski (chair) is currently a professor and director of the R. Samuel McLaughlin Centre for Population Health Risk Assessment at the University of Ottawa, Canada. Prior to joining the university, he was director of risk management in the Health Protection Branch of Health Canada. Krewski has a Ph.D. in statistics from Carleton University and an M.H.A. from the University of Ottawa. Expertise: Environmental and occupational epidemiology, biostatistics, and population health risk assessment.

Paul Demers, Ph.D. Director, Occupational Cancer Research Centre, Cancer Care Ontario, Toronto, Canada. Expertise: Cancer and other health effects of workplace exposures.

David Foster, Ph.D. Professor emeritus, Department of Mechanical Engineering, University of Wisconsin–Madison, and HEI Research Committee. Expertise: Engine combustion and emissions.

Joel Kaufman, M.D., M.P.H. Professor, environmental and occupational health sciences, and director, Occupational and Environmental Medicine Program, School of Public Health, University of Washington, Seattle. Expertise: Environmental exposures and respiratory and cardiovascular disease.

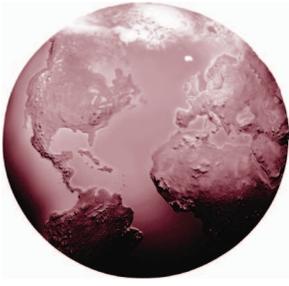
Jonathan Levy, Sc.D. Professor and associate chair, Department of Environmental Health, Boston University School of Public Health, Boston, Massachusetts. Expertise: Air pollution exposure and risk assessment, issues of heterogeneity and equity.

Charles Poole, Sc.D., M.P.H. Associate professor, Department of Epidemiology, University of North Carolina Gillings School of Public Health, Chapel Hill. Expertise: Epidemiologic and statistical methods and concepts, systematic review and meta-analysis.

Nancy Reid, Ph.D. Department of Statistics, University Professor of Statistics, Canada Research Chair in Statistical Theory and Applications, University of Toronto, Canada. Expertise: Statistical theory, likelihood inference, and design of studies.

Martie van Tongeren, Ph.D. Director, Centre for Human Exposure Science, Institute of Occupational Medicine, Edinburgh, Scotland, UK. Expertise: Development and application of tools to estimate current and past exposures in the work and home environments.

Susan R. Woskie, Ph.D., C.I.H. Professor, Department of Work Environment, University of Massachusetts–Lowell. Expertise: Methods for sampling and analysis of personal exposures to chemicals in occupational and environmental settings, exposure modeling, and statistical analysis of exposure data.



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HEI in the News

INSIGHT FOR POLICY MAKERS

Risk Policy Report

“New Study Backs EPA’s Decision to Avoid Ultrafine Limit in PM NAAQS” (January 29, 2013)

Results published in January in HEI Perspectives 3, *Understanding the Health Effects of Ambient Ultrafine Particles*, appear to support a decision by the U.S. Environmental Protection Agency (EPA) not to set a new standard for ultrafine particles (UFPs) in its 2012 National Ambient Air Quality Standard (NAAQS) for particulate matter (PM), according to *Risk Policy Report*. The Perspectives authors (a special panel convened by HEI) extensively reviewed the scientific literature on UFPs published since 1997 and found that the current evidence “is not sufficiently strong to conclude that short-term exposures to UFPs have effects that are dramatically different from those of larger particles.” The article quotes an unnamed source as saying that HEI’s report “confirms” the EPA’s conclusion that there was insufficient evidence to warrant setting a UFP standard and “will be useful for policy makers in the just-initiated next five-year review.”

SHARING NEW FINDINGS IN ASIA

The recent workshops HEI cohosted in Beijing, China, and Delhi, India, which reported findings of the Global Burden of Disease 2010 project (GBD 2010; see page 1) attracted coverage by numerous

Chinese, Indian, and international news outlets, including the BBC and the *Wall Street Journal* as well as those highlighted below.

The New York Times

“Air Pollution Linked to 1.2 Million Premature Deaths in China” (April 1, 2013)

Reporting on the presentation of GBD 2010 statistics in Beijing, the *Times* quoted HEI Vice President Robert O’Keefe as saying, “We have been rolling out the India- and China-specific numbers, as they speak more directly to national leaders than regional numbers.” The article placed the new GBD data within the context of China’s growing air pollution crisis.

National Public Radio

“China’s Air Pollution Linked to Millions of Early Deaths” (April 2, 2013)

In an interview, O’Keefe pointed out that “power plants burn significant amounts of very low-grade coal, and the energy consumption in China is rising dramatically.” But he also took note of positive signs from the Chinese government, such as its establishment of a nationwide air pollution monitoring network. “So for the first time the Chinese government is providing transparent [information on] levels of air pollution that the public can actually see.”

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