

ANNUAL REPORT

NIEHS-WHO Collaborating
Centre for Environmental
Health Sciences



September 2017 – August 2018

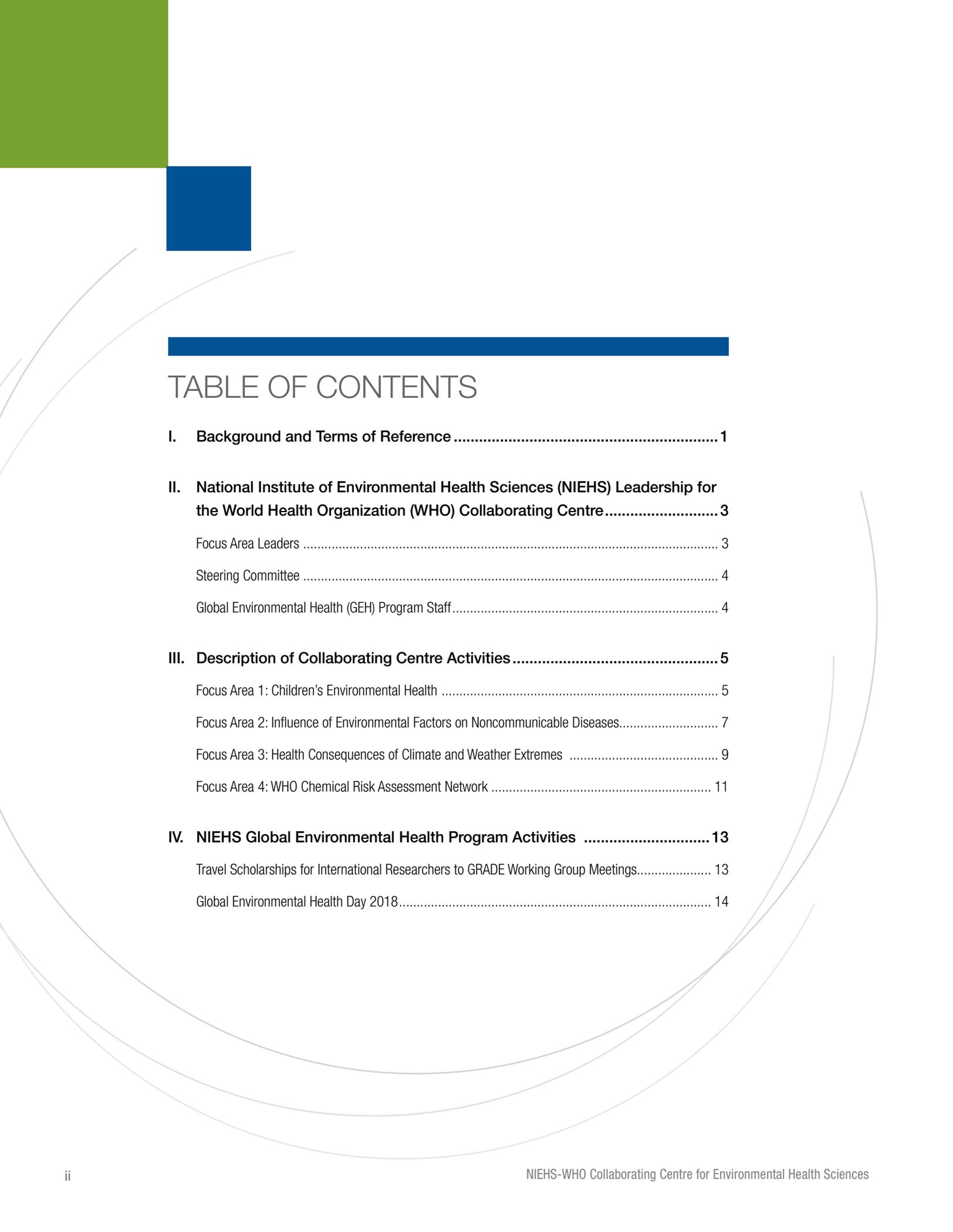


TABLE OF CONTENTS

I. Background and Terms of Reference	1
II. National Institute of Environmental Health Sciences (NIEHS) Leadership for the World Health Organization (WHO) Collaborating Centre.....	3
Focus Area Leaders	3
Steering Committee	4
Global Environmental Health (GEH) Program Staff.....	4
III. Description of Collaborating Centre Activities	5
Focus Area 1: Children’s Environmental Health	5
Focus Area 2: Influence of Environmental Factors on Noncommunicable Diseases.....	7
Focus Area 3: Health Consequences of Climate and Weather Extremes	9
Focus Area 4: WHO Chemical Risk Assessment Network	11
IV. NIEHS Global Environmental Health Program Activities	13
Travel Scholarships for International Researchers to GRADE Working Group Meetings.....	13
Global Environmental Health Day 2018.....	14

I. BACKGROUND AND TERMS OF REFERENCE

The National Institute of Environmental Health Sciences (NIEHS)-World Health Organization (WHO) Collaborating Centre for Environmental Health Sciences (Collaborating Centre) was designated September 14, 2013, building on several decades of productive partnership between the two institutions. NIEHS was re-designated in September 2017 and is proud to continue this important collaboration.

Directed by NIEHS Senior Advisor for Public Health John Balbus, M.D., M.P.H., the Collaborating Centre provides a focal point and resource for NIEHS to fulfill its strategic goals related to global environmental health (GEH). This partnership with WHO provides

NIEHS with opportunities for translating research findings into effective public health interventions to improve health around the world.

Under its designation for 2017-2021, the Collaborating Centre's Terms of Reference are:

- **To assist WHO in promoting international cooperation among environmental health research institutes around the world.**
- **To assist WHO in promoting global awareness of emerging issues in environmental health.**
- **To assist WHO in the preparation of training materials and support education and training efforts in environmental and occupational health sciences.**

NIEHS is pleased to deliver this first annual report to WHO for the 2017-2021 designation.



A new Collaborating Centre workplan, initiated in September 2017, is organized around four major focus areas corresponding to broad areas of science and international collaboration. These focus areas incorporate the work of previous focus areas and introduce opportunities to address new issues. By framing work around broader themes, the Collaborating Centre hopes to stimulate innovative, cross-cutting activities around the world.

The **Children's Environmental Health** focus area demonstrates how NIEHS activities may involve one or more themes, since the developmental origins of health and disease (DOHaD) hypothesis is linked to causation of many noncommunicable diseases in adult life. Under this theme, NIEHS seeks to further cultivate continued leadership and expansion of an international Network of WHO Collaborating Centres for Children's Environmental Health.

Environmental Influence on Noncommunicable Diseases is a new focus area that includes NIEHS activities related to indoor and outdoor air pollution, electronic waste (both previous focus areas), and DOHaD. This area also includes new activities to explore collaboration with WHO on understanding and preventing chronic kidney disease of unknown origin (CKDu), a growing epidemic among young adults in Central America and South Asia.

The **Health Consequences of Climate and Weather Extremes** focus area builds on NIEHS' past focus area on climate change and health. NIEHS will continue to work to raise awareness of the health consequences of climate change and the health benefits of activities that reduce greenhouse gas emissions. The new workplan includes a focus on educational materials for health professionals and students, and further collaboration on health system resilience.

NIEHS has supported the **WHO Chemical Risk Assessment Network** for more than four years. The new workplan formalizes network activities as a focus area. NIEHS will continue to support meetings and communications through which the Network helps build capacity for risk assessment and understanding of the health impacts of chemical exposures.



II. NIEHS LEADERSHIP FOR THE COLLABORATING CENTRE

Focus Area Leaders

Focus area leaders from NIEHS provide guidance to identified areas.



John Balbus, M.D., M.P.H.
Collaborating Centre director and lead for climate change



Kimberly Gray, Ph.D.
Co-lead for children's environmental health and indoor air pollution



Michelle Heacock, Ph.D.
Co-lead for children's environmental health and electronic waste



Bonnie Joubert, Ph.D.
Lead for chronic kidney disease of unknown origin



Thaddeus Schug, Ph.D.
Co-lead for developmental origins of health and disease



William Suk, Ph.D., M.P.H.
Co-lead for children's environmental health and electronic waste



Claudia Thompson, Ph.D.
Co-lead for developmental origins of health and disease and indoor air pollution



Brittany Trottier, M.P.H.
Co-lead for electronic waste



Christopher Weis, Ph.D.
Representative to the WHO Chemical Risk Assessment Network

Steering Committee



*Gwen Collman, Ph.D.
Division of Extramural
Research and Training*



*Stephanie London, M.D., Dr.P.H.
Division of Intramural Research*



*Mary Wolfe, Ph.D.
National Toxicology Program*



*Kimberly Thigpen Tart, J.D., M.P.H.
Office of the Director*

Global Environmental Health Program Staff



From left to right: John Balbus, M.D., M.P.H.; Ty Lawson, M.S.; and Trisha Castranio

III. DESCRIPTION OF COLLABORATING CENTRE ACTIVITIES

Focus Area 1: Children's Environmental Health

NIEHS continues to support the Network of WHO Collaborating Centres for Children's Environmental Health. NIEHS facilitates regular information-sharing calls within the Network and hosts a Network [website](#). In 2017, the Children's Environmental Health Clinic at the University of Alberta joined the Network.

Collaborating Centres currently participating in the Network include:

- *Center for Applied Research in Environment and Health at the Autonomous University of San Luis Potosí in San Luis Potosí, Mexico*
- *Center for Environmental Hazards to Children's Health at Pontificia Universidade Católica do Rio Grande do Sul in Porto Alegre, Brazil*
- *Children's Environmental Health Clinic at the University of Alberta in Alberta, Canada*
- *Children's Health and Environment Program at the University of Queensland in Brisbane, Australia*
- *Chulabhorn Research Institute in Bangkok, Thailand*
- *Department of Toxicology, Faculty of Medicine at the University of the Oriental Republic of Uruguay in Montevideo, Uruguay*
- *Hokkaido University Center for Environmental and Health Sciences at Hokkaido University in Sapporo, Japan*

- *Icahn School of Medicine at Mount Sinai in New York, USA*
- *Institute for Health and the Environment at the University at Albany in New York, USA*
- *Institute for Risk Assessment Sciences at Utrecht University in Utrecht, the Netherlands*
- *International Network on Children's Health, Environment and Safety in the Netherlands*
- *International Society of Doctors for the Environment in Basel, Switzerland*
- *National Institute of Environmental Health Sciences in North Carolina, USA*
- *National Institute of Environmental Research in Incheon, Republic of Korea*

Other efforts to raise awareness of children's environmental health (CEH) issues during the year included presentations at meetings of international significance and joint authorship of multiple peer-reviewed publications.



International Congress on Pediatric Pulmonology

NIEHS sponsored a session on CEH at the *18th International Congress on Pediatric Pulmonology*, and funded travel for two Network participants to attend the conference: Peter Sly, M.D., from the University of Queensland, and Aneesa Vanker, M.D., from the University of Cape Town. This annual event, which is attended by physicians from around the world, has rarely emphasized the role of the environment in children's health. The CEH session was well received; several participants asked for additional information.

South Asian Children's Environmental Health Regional Workshop

Seeking to form a stronger network of researchers interested in CEH in the Asia-Pacific region, NIEHS organized the South Asian Children's Environmental Health Workshop, held November 12-13, 2017, in New Delhi, India. The event brought together researchers who study children's unique

vulnerabilities to environmental exposures, and who are working on a range of international, regional, and local initiatives.

The workshop featured case studies and situation reports on Tajikistan, India, Nepal, Bhutan, Vietnam, Thailand, and Sri Lanka. By bringing together researchers from diverse places, the workshop aimed to establish a coordinated approach to address priority research areas and needs related to CEH. Discussion topics included similarities and differences in CEH statistics and research approaches in South Asia, regional interests, and the needs of participants in the *Network of WHO Collaborating Centres for Children's Environmental Health*. Case studies and discussions were published in a *final meeting report*. Workshop participants collaborated to submit a manuscript, "Children's Environmental Health in South and Southeast Asia: Networking for Better Child Health Outcomes," to the journal *Annals of Global Health* that is currently under review.



Focus Area 2: Influence of Environmental Factors on Noncommunicable Diseases

Electronic Waste (e-waste)

In November 2017, NIEHS hosted a symposium in New Delhi to share information, case studies, and common challenges in conducting e-waste research. It also aimed to build on previous workshops convened in 2013 in Depok, Indonesia, and *Geneva, Switzerland*. Presenters described efforts to research e-waste practices and reduce exposure to e-waste in countries such as Ghana, Uruguay, China, Myanmar, India, Sri Lanka, Thailand, Indonesia, and the Philippines.

Symposium discussions and findings were published in a final *report*. NIEHS also worked with influential researchers to publish “*Prevention-Intervention Strategies to Reduce Exposure to E-Waste*” in the journal *Reviews of Environmental Public Health*.

In August 2018, NIEHS provided travel support for Aimin Chen, M.D., Ph.D., University of Cincinnati, and Julius Fobil, Dr.P.H., University of Ghana, to present at the Joint Annual Meeting of the International Society of Exposure Science and the International Society for Environmental Epidemiology. They presented on “*Electronic Waste Recycling at Agbogbloshie, Ghana: A Global Problem, Current Intervention Strategies and Local Solutions*” and “*E-Waste Recycling and Exposure Reduction Intervention in the Philippines*”.

A session about e-waste at the 2019 Society of Toxicology Annual Meeting, raised awareness among scientific disciplines on the challenges of e-waste.



Chronic Kidney Disease

In June 2018, NIEHS partnered with the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) to host the *Chronic Kidney Diseases in Agricultural Communities workshop*. The workshop brought together nephrologists, pathologists, epidemiologists, toxicologists, and other researchers to address clinical, social, and scientific complexities of CKDu. NIEHS-funded researchers currently working in countries burdened by CKDu presented their research studies and findings. NIEHS and NIDDK continue to address research barriers, design long-term epidemiological studies, and create a common case definition.

Another CKDu workshop held March 2019 in San José, Costa Rica built on the 2018 workshop, encouraged additional collaboration across scientific disciplines, and included broader international participation. NIEHS worked with the Pan American Health Organization, the WHO Regional Office for South-East Asia, the Consortium for the Epidemic

of Nephropathy in Central America and Mexico, and NIDDK to organize the workshop. NIEHS supported travel to the meeting by researchers from regions affected by CKDu to ensure adequate representation.

DOHaD

NIEHS was an active participant in the Second Meeting on Avoidable Early Environmental Exposures. Kimberly Thigpen Tart, J.D., M.P.H., a member of the Collaborating Centre Steering Committee, attended the November 2017 *meeting* and joined participants in:

- Identifying audiences and their unique needs.
- Developing key messages that would resonate with various health care providers.
- Considering state-of-the-science communication and translation strategies and tools.
- Discussing policy changes, including changes to medical curricula, that would support implementation.

The Climate Change and Human Health Literature Portal now contains **more than 7000 articles** from 2007-2015, searchable by a number of descriptive facets including **health outcome, exposure pathway, geographic location**, and cross-cutting themes such as **adaptation, policy, and vulnerable populations**. The literature portal continues to be updated and expanded with new content.

Focus Area 3: Health Consequences of Climate and Weather Extremes

NIEHS has created a [Climate Change and Human Health Literature Portal](#) of more than 5,000 resources related to climate change and health. This curated, online database of global, English-language peer-reviewed and high-quality gray literature is publicly accessible and free. NIEHS is working to update the portal to include additional resources and search fields. More than 2,500 articles were identified and tagged with new fields in the past year. The portal was expanded to include publications relevant to the economics of health impacts of climate change, and disaster-related health impacts.

Building Capacity

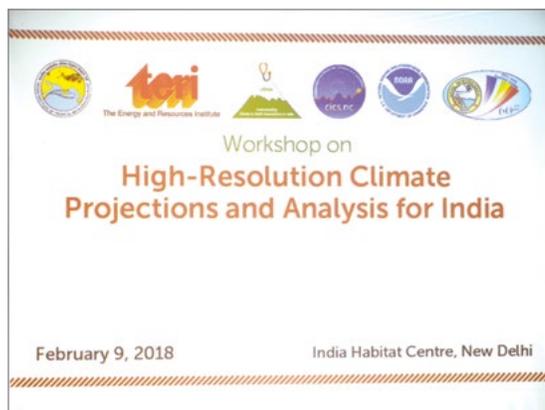
NIEHS continues to fund and support the Understanding Climate and Health Associations in India (UCHAI) initiative. UCHAI endeavors to

bring academicians, researchers, practitioners, and students from diverse fields – including climate science, environment, public health, public policy, social development, and urban planning – together through a resource network and community of practice. NIEHS worked with the UCHAI Secretariat throughout the year to organize events, webinars, and meetings. This effort included:

- A session at the India Public Health Association Annual Meeting in February 2018 featured Manjeet Saluja of the WHO India Office.
- A pair of workshops conducted through the India-U.S. Partnership for Climate February 9, 2018 (New Delhi), and February 11-12, 2018 (Hyderabad), with the National Oceanic and Atmospheric Administration and other knowledge partners. UCHAI supported sessions involving applications of climate data to health.



Panelists at the 2017 International Conference on Impact of Environment on Women's Health. (Photo courtesy of NIEHS)



- The Annual College Cultural Festival (PULSE), held September 16-22, 2017, at the All India Institute of Medical Sciences in New Delhi. Events emphasized the importance of global climate change and its impact on human health through creative arts (T-shirt painting) and social outreach. UCHAI was a knowledge partner for these events.

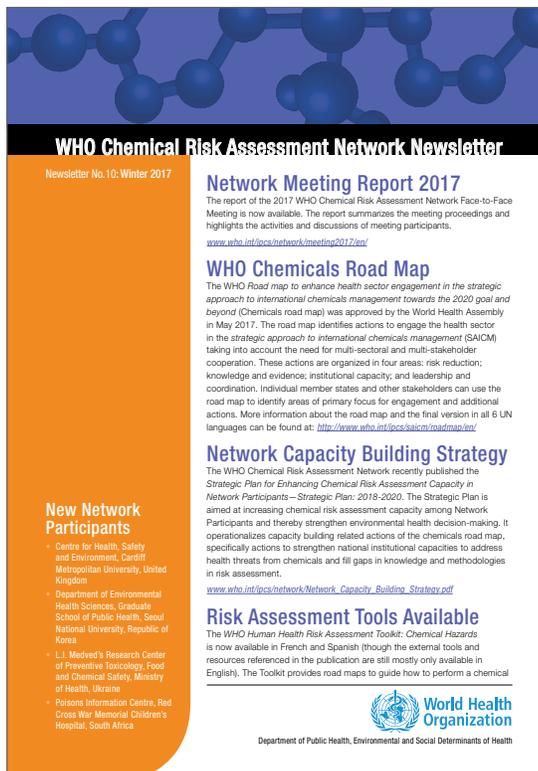
- Development of *videos* and infographics on topics including climate impacts on nutrition and vector-borne diseases.

In December 2017, NIEHS supported the 2017 International Conference on Impact of Environment on Women's Health, hosted at Amity University in Lucknow, India. NIEHS organized two sessions at the conference: one on climate change and women and one on air pollution and health. NIEHS Director Linda Birnbaum, Ph.D., provided an opening keynote address. The session on climate change and women led to the publication of manuscripts in *PLOS Medicine* and *GeoHealth*.

Focus Area 4: WHO Chemical Risk Assessment Network

Chris Weis, Ph.D., serves as the NIEHS liaison to the WHO Chemical Risk Assessment Network. NIEHS supports the Network Secretariat through participation in steering committee calls and document reviews, and by providing administrative support for the Network. NIEHS provides meeting support and assists WHO with the development of quarterly Network newsletters, website content, and other communications products. NIEHS also participated in and supported the *2017 WHO Chemical Risk Assessment Network meeting* in Parma, Italy, in June 2017, and worked with the Network Secretariat to finalize the *meeting report*.

In November 2017, Weis delivered a presentation to WHO International Program for Chemical Safety (IPCS) staff in Geneva and met with IPCS officials to discuss issues relevant to activities of the Network. He joined the Network's Working Group on Emerging Risks as a member of the planning team for a 2019 meeting.



The WHO Chemical Risk Assessment Network Newsletter



Members of the WHO Chemical Risk Assessment Network at the June 2017 meeting. (Photo courtesy of the European Food Safety Authority)



IV. NIEHS GLOBAL ENVIRONMENTAL HEALTH PROGRAM ACTIVITIES

In addition to NIEHS' role as a Collaborating Centre, NIEHS annually supports GEH outreach efforts, training, and awareness events.

Travel Scholarships for International Researchers to GRADE Working Group Meetings

For more than 15 years, the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) Working Group has developed a structured framework for 1) grading the quality of evidence, and 2) structuring the evidence to the decision-making process for guideline development and other types of recommendations. Refinements to GRADE guidance are discussed and developed at working group meetings. GRADE is used by over 100 organizations around the world, mostly for clinical care topics, and was endorsed by the Institute of Medicine in 2011.

The National Toxicology Program (NTP) collaborates with the GRADE Working Group to adapt this framework to accommodate topics in environmental health as part of their systematic review activities. NTP's work with GRADE is international and includes input from WHO; various academic centers who work in systematic review (e.g., University of California-San Francisco Navigation Guide, SYRCLE [Systematic Review Centre for Laboratory animal Experimentation]); CAMRADES (Collaborative Approach to Meta-Analysis and Review of Animal Data from Experimental Studies); and other federal agencies.

The 2018 GRADE Working Group meeting was held in Bogota, Colombia, April 18-19, 2018. The

meeting was co-sponsored by the Department of Clinical Epidemiology and Biostatistics of the Pontificia Universidad Javeriana Colombia. To encourage increased participation from underrepresented countries, researchers in the environmental health sector, and nongovernmental organizations in developing GRADE guidance, NIEHS provided travel scholarships to selected attendees from underrepresented countries or disciplines. NIEHS funds were used to support 12 awardees from five countries (Brazil, Spain, Argentina, Canada, and Columbia) and six institutions, ranging from graduate students to fellows and early-career scientists.

Global Environmental Health Day 2018

On June 6, 2018, NIEHS held its third annual GEH Day in Research Triangle Park, North Carolina. The event brought together over 100 global environmental health professionals, including NIEHS staff, researchers from diverse disciplines, policy experts, and students, to discuss important issues in translating research into practice and to share lessons learned.

GEH Day 2018 videos, [now available online](#), feature NIEHS staff opening remarks, including a brief history on the evolution of the GEH program; a presentation from keynote speaker Christine McEntee, Executive Director and CEO of American Geophysical Union; and presentations from six GEH fellows highlighting research and projects from around the world that translate research into action.

McEntee, left, and Balbus discuss challenges and opportunities of transdisciplinary research during a session at GEH Day 2018. (Photo courtesy of Steve McCaw)





Connect with NIEHS GEH

GEH at NIEHS: <https://www.niehs.nih.gov/research/programs/geh/>

GEH Newsletter: https://www.niehs.nih.gov/research/programs/geh/geh_newsletter/index.cfm

Subscribe: <https://go.usa.gov/xmJvE>

NIEHS-WHO Collaborating Centre: <https://www.niehs.nih.gov/research/programs/geh/partnerships/index.cfm>



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