



# EMERGING SCIENCE FOR ENVIRONMENTAL HEALTH DECISIONS

## Developing Wearable Technologies to Advance Understanding of Precision Environmental Health

*A Collaborative Virtual Workshop of  
The Standing Committee on the Use of Emerging Science for Environmental Health Decisions  
and  
The Board on Human Systems Integration*

**June 1-2, 2023 1-4pm ET**

**FOR REGISTRATION AND MORE INFORMATION, PLEASE VISIT THE [WORKSHOP WEBSITE](#)  
ALL TIMES LISTED ARE IN EASTERN TIME**

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From coast to coast, technology is becoming more integrated into daily life. Now, cutting edge technologies, like wearable devices, can be used to spur progress in the biomedical and environmental health fields. In this workshop, experts will discuss emerging applications of wearable technologies and the latest research and advancements in wearable technology for capturing, monitoring, and predicting environmental exposures and risks to inform precision environmental health. Additionally, the workshop will explore other areas such as disease monitoring, interventions, and biomedicine, and discuss technology adoption, implementation, and science communication for advancing biomedical and environmental health research.

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### Workshop Agenda

#### DAY 1: June 1, 2023, 1:00pm-4:00pm Eastern Time

1:00 Welcome and Opening Remarks

**Kristen Malecki**<sup>†</sup>, University of Illinois at Chicago

**Rick Woychik**, National Institute of Environmental Health Sciences

1:15 **Keynote Address: Wearables and their Potential in Environmental Health and Biomedical Research**

**Session Moderator: Tiffani Bailey Lash**<sup>\*</sup>, National Institute of Biomedical Imaging and Bioengineering

**Cristina Davis**, University of California, Davis

1:30 Keynote Q&A (15 minutes)

<sup>\*</sup> Member of the Standing Committee on the Use of Emerging Science for Environmental Health Decisions

<sup>†</sup> Member of the workshop organizing committee

## SESSION 1: Capturing, monitoring, and predicting environmental exposures, hazards, and risks to inform precision environmental health

*This session will explore the use of advanced technologies for monitoring and predicting environmental exposures and risks to inform health. Experts will discuss the latest technological advances and share strategies for advancing precision environmental health research.*

Session Moderator: **Yuxia Cui\***, National Institute of Environmental Health Sciences

1:45 Plenary Speakers

**Sameer Halai**, WeHealth

**Bijan Najafi**, Baylor College of Medicine

**Natalie Johnson**, Texas A&M University

2:30 Session 1 Discussion Q&A (20 minutes)

## SESSION 2: Using wearables to advance research for dynamic and real-time measurements of environmental exposures

*Speakers in this session will discuss opportunities and share innovative strategies to improve understanding of the health impacts of environmental exposures through dynamic, real-time wearable data. The goal is to identify opportunities for research and strategies for measuring environmental exposures in real-time.*

Session Moderator: **Paloma Beamer\*†**, University of Arizona

2:50 Plenary Speakers

**Ana Rappold**, Environmental Protection Agency

**Kevin Lanza**, UTHealth School of Public Health

**David Noren & Sara Mariani**, Philips

3:35 Session 2 Q&A Discussion (20 minutes)

3:55 Day 1 Closing Remarks

**Rima Habre\*†**, Keck School of Medicine of the University of Southern California

4:00 Adjourn Day 1

\* Member of the Standing Committee on the Use of Emerging Science for Environmental Health Decisions

† Member of the workshop organizing committee

## Day 2: June 2, 2023, 1:00pm-4:00pm Eastern Time

1:00 Welcome and Opening Remarks

**Kristen Malecki**<sup>†</sup>, University of Illinois at Chicago

### SESSION 3: Exploring wearable applications in other research areas such as disease monitoring, interventions, and biomedicine

*Speakers in this session will discuss recent advances in medical technology and share experiences in using wearables for disease management. The goal is to broaden the understanding of the potential of wearables and identify new opportunities for research in healthcare and beyond.*

Session Moderator: **Akane Sano**<sup>\*</sup>, Rice University

1:05 Plenary Speakers

**Shruthi Mahalingaiah & Lauren Cheung**, Harvard University & Apple

**Jessilyn Dunn**, Duke University

**David Armstrong**, Keck School of Medicine of the University of Southern California

**Veena Misra**, North Carolina State University

1:45 Session 3 Q&A Discussion (15 minutes)

### SESSION 4: Panel Discussion: Understanding how technology adoption, implementation, and science communication factor in advancing biomedical and environmental health research

*Experts from academia, industry, and government will share their insights on the challenges and opportunities of adopting new tools, implementing technology, and communicating scientific discoveries to advance environmental health and biomedical research. The goal of this session is to foster a discussion that will help to identify strategies for effectively translating research, adopting technology, and communicating information.*

Session Moderator: **Jennifer Horney**<sup>\*</sup>, University of Delaware; **Trey Thomas**<sup>†</sup>, US Consumer Product Safety Commission

2:00 Panel Discussion with Speakers and Invited Panelists

#### **Panel 1: User Perspective (one-to-one application)**

**Nita Farahany**, Duke University

**Ritika R. Chaturvedi**, University of Southern California

**Shekhar Bhansali**, Florida International University

#### **Panel 2: Systems Perspective**

**Stephanie Russo Carroll**, University of Arizona

**Tiffany Powell-Wiley**, National Institute of Health

**Deborah Prince**, UL Standards & Engagement

\* Member of the Standing Committee on the Use of Emerging Science for Environmental Health Decisions

† Member of the workshop organizing committee

2:55 All Panelist Q&A (20 minutes)

## SESSION 5: Group Discussion: Identifying Research Gaps, Limitations, and Future Directions for Wearables in Environmental Health and Biomedical Research

*This group discussion will identify research gaps and limitations in wearables for environmental health and biomedical research and propose future directions for advancing this field. Participants will explore new technologies and interdisciplinary collaborations to improve health outcomes and inform decision-making.*

Discussion Moderator: **Rima Habre**\*†, Keck School of Medicine of the University of Southern California

3:15 Group Discussion with Invited Panelists

**Joseph Wang**, University of California, San Diego

**Ed Ramos**, Scripps Research

3:45 Closing Remarks -- **Rima Habre**\*†, University of Southern California

4:00 Adjourn Workshop

### Workshop Organizing Committee

This workshop was organized by the following experts: **Rima Habre (Workshop Chair)**, Keck School of Medicine of the University of Southern California; **Paloma Beamer**, University of Arizona; **Yuxia Cui**, National Institute of Environmental Health Sciences; **Amy Wagoner Johnson**, University of Illinois Urbana-Champaign; **Jennifer Horney**, University of Delaware; **Tiffani Bailey Lash**, National Institute of Biomedical Imaging and Bioengineering; **Akane Sano**, Rice University

### About Us

The National Academies' Standing Committee on the Use of Emerging Science for Environmental Health Decisions (ESEHD) examines and discusses issues on the use of new science, tools, and research methodologies for environmental health decisions. The ESEHD committee is organized under the auspices of Board on Life Sciences and the Board on Environmental Studies and Toxicology of the National Academies of Sciences, Engineering, and Medicine, and sponsored by the National Institute of Environmental Health Sciences.

\* Member of the Standing Committee on the Use of Emerging Science for Environmental Health Decisions

† Member of the workshop organizing committee