National Institute of Environmental Health Sciences

Partnerships for Environmental Public Health

Climate Change and Environmental Justice: Engaging Diverse Teams

Workshop Abstracts

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Tuesday, February 20, 2024

Building Partnerships for Climate Justice in Rural and Urban Areas: Skill-building Session led by the Mountain West Climate-Health Engagement Hub

Katie Dickinson, Lisa, Cicutto, Kathy James, Jaime Aguilar, Chris Canaly, and Svetlana Bresnitz

February 20, 2024, 9:00 – 10:30am

Background: Climate justice is the principle that we must acknowledge and confront current inequities and strive towards a more just distribution of benefits and burdens as we take action to mitigate, adapt, and build resilience in the face of climate change. Engaging directly with communities is central to this work. As part of the NIH Alliance for Community Engagement - Climate Health (ACE-CH) initiative, the Mountain West Climate Health Engagement Hub is building partnerships with rural and urban communities in Colorado to identify priorities and opportunities for action to promote climate resilience and health equity.

Workshop Goals & Content: Mountain West team members representing the Colorado School of Public Health, National Jewish Health, and West Denver and San Luis Valley communities will describe the approach we are taking to build strong community-academic partnerships and support community-led action. We will explain the steps we are taking to:

1. Understand how communities are experiencing climate stressors (drought, wildfires, air quality) across multiple systems and sectors.
2. Identify priorities, opportunities, and assets to advance climate justice.
3. Build capacity for innovative and effective research and action.

Through our efforts, we hope to provide a platform to engage effectively in climate action for people from diverse backgrounds, such as urban-rural, agricultural workers, health care providers, racial and ethnic groups, children, older adults, migrants, people with preexisting health conditions, and those living in poverty. By actively involving these communities, we are able to amplify their voices and insights to devise a plan of action that will respond to specific climate change challenges they face.

By the end of this 90 min skill-building session, participants will be able to:

- Discover why and how we approach climate change from a community-engaged perspective.
- Explain the basics of climate change and its impacts on human health and health inequities to the general population that is inclusive of language and literacy.
- Provide examples of community-led actions to promote climate justice in rural and urban areas.
- Apply the principles of climate resilience and climate justice to co-design action plans in partnership with community.

PEPH Evaluation Training – Logic Models and Metrics

Kristi Pettibone, Christie Drew, and Mbeja Lomotey

February 20, 2024, 9:00 – 10:30am

In 2012, NIEHS's Division of Extramural Research and Training published the PEPH Evaluation Metrics Manual. During this workshop we will teach participants how to apply the concepts covered in the manual to their environmental health science research and community engagement activities. During this workshop we will provide an overview of the Evaluation Metrics Manual, teach participants how to use logic models as a tool to work with partners to document program activities and impacts, and identify metrics that participants can use to demonstrate program accomplishments. This workshop will we aim to be dynamic and interactive, to keep people engaged and move the conversations forward. We will incorporate small group activities, large group discussion, and individual reflection. Topics covered during the logic model training include: partnerships, products and dissemination, education and training, capacity building, cost-benefit analyses, report backs, and more. Participants will leave the workshop with sample logic models and metrics as well as materials and knowledge that they can use to develop logic models and metrics for their own programs.

Maximum number of attendees: 40

Moving Forward with Reporting Back

Katrina Korfmacher, Jennie Ohayon, and Katie Boronow

February 20, 2024, 9:00 – 10:30am

Over the past 20 years, the practice of reporting back individual environmental health research results has been developed by community-based research teams. High-level guidelines for ethical report-back are well-established, but report-back is not consistently expected, supported, or implemented across the field. In February 2022, a presentation to NAEHS Council resulted in encouragement to move forward with implementing appropriate report-back of environmental health research results to participants. Expanding implementation across diverse research types, populations, and contexts is a complex process, which requires developing expectations and guidelines, training multiple stakeholders (including researchers, IRBs, reviewers, clinicians, and non-academic partners), and allocating resources to support development of report-back infrastructure, conduct additional research, and implementation by individual researchers. A recent paper by Korfmacher and Brody (2023) suggests a framework of "Guidelines, Training, and Resources" needed to move forward with this charge. The workshop aims to engage participants in operationalizing recommendations, prioritizing next steps, and identifying opportunities for short, medium, and long term action.

Community Engagement Tools for Climate and Health in Hard-to-Reach Populations

Stacy Stanifer, Luz Huntington-Moskos, Kelly Kennoy, Robin Ray, and Jessica Thompson

February 20, 2024, 9:00 – 10:30am

Hard-to-reach populations are particularly vulnerable to climate change and other complex environmental health issues, creating environmental justice challenges. In this workshop, we will highlight various community engagement methods and tools to address climate and health with hard-to-reach populations (e.g., rural and under-resourced communities). The workshop will offer breakout roundtables on the use of key informant interviews, digital storytelling, climate conversation cards, policy strategies, and concept mapping when engaging hard-to-reach populations. In the breakout sessions we will discuss 1) use of **Key Informant Interviews** following a natural disaster in rural Appalachia to develop a culturally sensitive, tailored, regional toolkit for disaster resilience; 2) use of **Digital Storytelling** to give voice to communities affected by environmental exposures or natural disasters. In this session, we will discuss the development of video stories in parallel with citizen science research including needed equipment, scripting, video release forms, process for reviewing draft video with community partners, and challenges when working with different age groups or geographic regions; 3) use of **Climate Conversation Cards** developed to facilitate conversations between people of all backgrounds and comfort levels through shared empathy and experiences. During the conversation using the cards, participants work though different levels (e.g., icebreaker, feelings, imagining the future, meta-reflection) to form connections with others and share their vision for a climate resilient future; 4) **Environmental Public Health Advocacy and Policy Strategies** to educate, inform and engage key stakeholders, policymakers and other community team members about building capacity and demand for climate change and environmental justice; and 5) how to apply **Concept Mapping** to build consensus on climate change strategies. **Concept mapping** is a participatory mixed method capable of generating consensus around complex health topics. Following a series of iterative steps, the approach combines quantitative brainstorming, sorting, and rating activities to create pictorial concept maps and qualitative interpretive group discussions to uncover community-specific perspectives and intervention opportunities. The workshop participant will analyze various approaches to engaging a diverse array of populations, including those in rural and other hard-to-reach populations to promote community engagement and environmental health action in climate and health.

A Framework for Teaching Environmental Health Education for Health Care Professionals Working with Indigenous and Environmental Justice Communities

Judith Zelikoff, Kathleen M. Vandiver, Amanda Mayer, Raeann Mettler, Esther Erdei

February 20, 9:00am – 12:15pm

Background: Environmental Justice (EJ) communities are especially vulnerable to environmental contaminants and Climate Change health effects. Our recently funded NIEHS R25 Short Course for

health professionals has raised awareness about the toxicity of specific contaminants and their health effects, and provided biomolecular insights as to why some individuals are more vulnerable than others. Such factors are not currently in the forefront of academic health professionals' education.
Goal: Every individual's response to a toxicant is influenced by their genetic makeup and capacity to detoxify chemicals. Thus, the purpose of this workshop is to encapsulate the successful framework of our Short Course and share this experience with PEPH annual meeting participants, encouraging them to develop comparable learning opportunities for their own communities and stakeholders.
Learning Objectives: Upon completion of this workshop, participants will have experienced several different teaching methodologies, which could be adapted for their own purposes. Additionally, participants will gain insights into how genetic variation and environmental exposures–including many aspects of Climate Change—can adversely affect health outcomes in EJ communities.
Content: This workshop on Gene-Environment Interactions will feature experiences with multiple modes of instruction. These include: 1) working with the MIT-patented hands-on DNA and Protein models to elucidate the molecular mechanisms of such interactions; 2) delivering interactive presentations using different platforms to prompt dialogue and debate; and 3) guiding participant teams to develop environmental public health communication products. Such communication products could be submitted to the PEPH Resource Center to support other investigators and EJ communities.
Summary: The workshop will provide participants an opportunity to experience a unique educational framework in action, including a diversity of tactile, didactic, and collaborative learning opportunities in environmental health.

Maximum number of attendees: 24

Engaging with Environmental Justice Communities: Letting Communities Take the Lead

Jaron Burke, Peggy Shepard, and Micaela Martinez

February 20, 2024, 10:45am – 12:15pm

WE ACT for Environmental Justice has a long history of engaging with residents in Northern Manhattan to advocate for a healthier community. One component of WE ACT's advocacy has been community-based participatory research (CBPR), including several projects to better understand the impact of environmental exposures in Northern Manhattan in partnership with researchers at Columbia University's Mailman School of Public Health. With the launch of several new projects in 2023, WE ACT has a leading role in conducting CBPR, and seeks to establish best practices for engaging with environmental justice communities on environmental health research.

Through this workshop, WE ACT aims to achieve the following goals:

1. Define environmental justice and describe key historical events in the environmental justice movement.
2. Identify at least three (3) current issues areas that are impacting environmental justice communities.

3. Outline successes and challenges of previous community-based research projects in Northern Manhattan.
4. Describe WE ACT's current approach to engaging community members in air quality monitoring projects.
5. Establish best-practices for researchers to engage with environmental justice communities on research related to air quality and other environmental health topics.

This workshop will begin with an introduction to key concepts of environmental justice, including a brief summary of key historical moments in the environmental justice movement. This overview will be followed by a discussion of current and emerging environmental justice issues that WE ACT is engaging on. Drawing on these issue areas, a series of case studies will be provided focused on past community-based research projects that WE ACT has engaged in over the last 30 years, including a review of the role researchers from Columbia University and other academic institutions played, and an outline of successes and challenges for each project. An overview of WE ACT's newly launched air quality monitoring projects will follow, which will describe WE ACT's current approach to engaging with community members on environmental health research. The workshop will conclude with an outline of best-practices from previous projects and that WE ACT currently employs in ongoing research projects. Time will be allotted for a Q&A session at the end of the workshop.

Maximum number of attendees: 30

The Value and Limitations of Applying an Environmental Health Literacy Framework

Katy May, Kathleen Gray, and Anna Hoover

February 20, 2024, 10:45am – 12:15pm

In recent years, environmental health literacy (EHL) has gained ground as a framework that can be applied to assess environmental health interventions, particularly those focused on community engagement and informal science education. The goal of this workshop is to convene a group of people who are using or interested in applying an EHL framework to their community engaged or informal science education interventions for intentional discussion about its application, strengths, and limitations. We will start with brief (~10 min) presentations, showcasing how EHL is being applied in: report-back efforts associated with PFAS exposure assessment in North Carolina (NC), climate resilience focused programming with youth in NC, and in community-engaged programming in Kentucky. Theses presentations will be followed by small group discussions at tables; participants will discuss how they are applying EHL in their work, focusing on two overarching questions:

- What are the strengths of the EHL framework (i.e., what does it enable us to characterize or assess that we may not have otherwise)?
- What are the limitations (i.e., are we capturing important outcomes; what is missing from this framework)?

To conclude, we will reconvene as a large group to share insights from the smaller discussions and identify people who are interested in continuing the conversation. Ideally, this workshop, in addition to ongoing efforts by conveners and other researchers applying an EHL framework, will enhance

understanding of the framework and provide insights into opportunities to apply it in meaningful ways.

Intro to open-source GIS modeling for public health

Theodros (Teddy) Woldeyohannes, Daniel Bene, Joseph Hoover, Ester Erdei, and Yan Lin

February 20, 2024, 10:45am – 12:15pm

Background: Geographic Information Systems (GIS) provide versatile tools for uncovering spatial patterns of public health and environmental justice (EJ) issues at multiple scales within the exposome. There are many open-source GIS platforms that allow for cost-effective and equitable integration of GIS tools into data analysis workflows. With open-source GIS, public health researchers can effectively collaborate and easily share reproducible methodologies and findings, helping to foster more inclusive and innovative approaches to cross-cutting health challenges. In our workshop, we will introduce participants to open-source GIS as well as techniques for leveraging GIS tools and spatial data to advance public health research related to the plural environmental health effects of climate change in EJ communities.
Goals: Our goal is to introduce participants to GIS concepts and open-source GIS tools, using spatial analysis and data-visualization packages in R. Participants will learn the basics of GIS data-structures, loading and visualizing spatial data, and spatial relationships in regression analyses. This workshop will give participants the knowledge and tools to explore ways GIS can be leveraged in their own research.
Content: Our workshop will be guided by researchers from the UNM Center for Native Environmental Health Equity Research, in which participants will follow along in setting up and performing spatial-statistical analysis in R on their personal laptop. The workshop will begin with a brief introduction and discussion on geographic concepts and GIS, with a focus on spatial data types and an overview of GIS applications in public health. The introduction is followed by a guided tutorial comparing non-spatial and spatial multivariate models using data to explore associations between potential environmental exposures from the Toxic Release Inventory (TRI), sociodemographic covariates from the Social Vulnerability Index (SVI), and low birthweight averages aggregated by census tract. We will also cover tests for spatial autocorrelation and basic cartographic visualization. An R Markdown file and sample data will be provided to participants in a GitHub repository. Participants will be given detailed instructions on installing R, R Studio, and some R libraries onto their laptops prior to the workshop. No previous GIS or coding experience is required.

Laptops are required for this workshop.

Maximum number of attendees: 30

Thursday, February 22, 2024

Using Virtual Environments to Translate Critical Children's Environmental Health Information to the Community: A Hands-on Workshop

Sun Joo (Grace) Ahn, Morgan Barnes, Haley R. Hatfield, Nathan Mutic, and Abby Mutic

February 22, 1:30 – 3:00pm

This interactive workshop offers a hands-on exploration of the transformative impact of virtual environments as tools for the effective translation of children's environmental health information, emphasizing the crucial role of community-academic partnerships. We will highlight the significance of collaborative efforts between researchers and community members, showcasing how these partnerships can contribute to local initiatives, co-designed immersive virtual reality (VR) experiences, and engage children through innovative gaming platforms (e.g., Roblox) to translate critical environmental injustice issues in fun and engaging ways.

The session will begin with an overview of successful collaborative initiatives, spotlighting the partnership between Emory University, the University of Georgia, Spelman College, and the Atlanta-based Center for Black Women's Wellness. Our Center for Children's Health Assessment, Research Translation, and Combating Environmental Racism (CHARTER) unites researchers in public health and communication fields with community members possessing expertise in local communities and concerns.

This partnership has fueled the development of a VR-based immersive narrative focused on a unique time-travel journey that offers users insight into the enduring impacts of past discriminatory housing policies, such as redlining. Workshop participants will have the opportunity to experience this immersive narrative, witnessing the intergenerational effects of discriminatory housing practices and fostering a deeper understanding of environmental injustices faced by historically marginalized communities.

Additionally, we will showcase a Roblox world designed to engage children in conversations about indoor air quality and its impact on health. This interactive environment educates children about potential hazards, including mold and mildew, pet dander, gas stoves, and other asthma triggers. By leveraging the familiarity of the Roblox platform, we aim to connect with a younger audience and empower them with knowledge that can influence their behavior toward healthier living.

Throughout the session, we will emphasize the importance of integrating the perspectives of content experts as community members. By weaving together academic expertise and community insights, our approach ensures that the VR experiences are scientifically accurate, culturally relevant, and resonant with the lived experiences of the intended audience. Join us for an immersive exploration into the collaborative process of co-designing VR environments, fostering impactful communication on environmental health, and promoting sustainable change within communities.

Maximum number of attendees: 50

Authentic Community Engagement for Environmental & Climate Justice

Christopher Heaney, Matthew Aubourg, Greg Sawtell, Shashawnda Campbell, Meleny Thomas, Carlos Sanchez-Gonzales, Maria Payan, Michael Payan, Sacoby M. Wilson, Walkiria Pool, Laprisha Berry Daniels, Donele Wilkins, Angela G. Reyes, Natalie Sampson, Amy J. Schulz, and Jill Johnston

February 22, 1:30 – 4:45pm

Community engaged research (CEnR) can be an effective catalyst for actions that mitigate the disproportionate and adverse impacts of environmental pollution in low-income communities and communities of color. Communities' experiences with CEnR partnerships can vary depending on the extent to which academics and community partners are able to act as co-equals and structure communities' lived experiences and cultural and contextual knowledge within all steps of the research process. This workshop is comprised of two parts.

Part I: Attendees will participate in an interactive workshop session that will help improve understanding of the principles, theory, and practice of community-based participatory research and community-engaged research. Workshop attendees will learn the nuts and bolts of community-engaged research, recognize differences in community-engaged research along a continuum of power, decision-making, and resource sharing, understand what elements underpin authentic community-engaged research, and how to implement best practices to enhance the rigor, reproducibility, productivity, and health promoting impact of partnerships with community members experiencing disproportionate and adverse impacts of environmental pollution.

Part II: Attendees will learn directly from community environmental justice (EJ) leaders who will share their experiences about what's worked and what hasn't worked within community-engaged research partnerships with academics to address community members' lived experiences with the disproportionate and adverse impacts of industrial environmental pollution. Panelists will share organizing and community-engaged research and environmental justice organizing experiences with urban industrial complexes, community-led neighborhood development, zero waste, housing justice, industrial food animal production, and climate justice. Community EJ leaders will also share lessons learned and positive outcomes with environmental health science knowledge generation at the intersection of administrative legal and policy strategies. Moderators will facilitate discussion and create interactive opportunities for attendees to share their own experiences and ask questions of panelists.

Expanding Impactful Community-Engaged Research Practices: A Hands-on Training in Using a Digital Tool to Create Personal Exposure Reports for Study Participants

Jennifer Ohayon, Katherine Franz, Katie Boronow, Casey Mullen

February 22, 1:30 – 4:45pm

This workshop will give participants the practical knowledge and tools needed to share personal results with participants in environmental exposure studies.

As the environmental health field embraces more transparent and community-engaged research approaches, reporting back personal study results has been emphasized as ethical best practice. Report-back acknowledges participants' right-to-know their data, empowers them to take action to reduce personal and collective exposures, and facilitates a climate of openness and respect. In addition, report-back can improve study recruitment and retention, and helps researchers discover exposure sources through participant consultation.

Though groups such the National Academies of Sciences, Engineering and Medicine have recommended that report-back should become routine, many researchers have been slow to adopt the practice, often hindered by the time and skills required for effective report-back. To facilitate researchers in returning high-quality personal results from environmental exposure studies, researchers at Silent Spring developed the Digital Exposure Report-Back Interface (DERBI) with NIH support. This interactive, web-based tool presents personalized chemical results in a way that study participants can easily understand and makes it easier for researchers to share personal results in studies of all sizes. Generated reports can include information about chemicals detected, potential health effects, strategies to reduce exposures, and overall study findings. DERBI also includes analytical tools that help researchers interpret results, including identifying common chemical mixtures.

The workshop will include a 30-minute presentation and discussion on ethical and practical considerations and best practices for report-back followed by a 2.5-hour session in which researchers gain hands-on practice in report preparation using their own data or a provided model dataset. Using an easy-to-use DERBI dashboard, researchers without software expertise will gain skills needed to create their own high-quality biomonitoring reports for print, computer or smartphones.

Laptops are required for this workshop.

Maximum number of attendees: 20

Incorporating PFAS Research into Formal (K-12) and Informal Science Learning Environments to Engage Diverse Learners

Dana Haine, Katy May, Laurel Schaider, Kathleen Gray, and Lynn Chesnut

February 22, 3:15 – 4:45pm

The incorporation of timely and relevant environmental issues into classroom instruction and informal science programming is an effective strategy for engaging diverse science learners and promoting STEM careers. Participants in this interactive session will hear from educators and scientists at three NIEHS-funded research centers that feature current research on PFAS (per- and polyfluoroalkyl substances) in K-12 classrooms and informal science learning environments. These efforts range from multi-year, NIH-funded teacher professional development programming to partnerships with school-based programs and early-stage efforts to engage tribal partners in informal science learning. The UNC Center for Environmental Health and Susceptibility will showcase its efforts to bring teachers and scientists together to co-develop PFAS-focused curricula using design thinking approaches, with an ultimate goal of promoting awareness of and interest in biomedical researcher careers among high school students in North Carolina (NC) counties addressing PFAS contamination. The NCSU Superfund Research Program will describe how they are preparing Science Olympiad coaches in NC to introduce the topic of industrial PFAS pollution into their youth programming through incorporation of data from the Cape Fear River. The University of Rhode Island Superfund Research Program will describe their work on Cape Cod, MA, to engage high school educators and youth on PFAS-related topics through STEM fairs and as part of the Mashpee Wampanoag Tribe's Preserving Our Homelands summer science camp. Presenters will describe their approaches to creating and disseminating PFAS-centric educational activities, including strategies for engaging trainees in these activities. Presenters will model at least one activity that uses "real-world" PFAS data, showcasing strategies for translating research findings into activities for non-academic audiences, and debrief the activity with participants.

Maximum number of attendees: 50