PEPH2020 | Past, Present, and Future: Workshop Abstracts

Session I

Low-Cost, High Reward: Community-Based Air Quality Monitoring for Environmental Justice

Lead Presenter: Jan-Michael Archer, University of Maryland School of Public Health

Co-Presenter: Sacoby Wilson, Maryland Institute for Applied Environmental Health

Format: Small Group Activity

Learning objectives

- Learn about the man-made and natural factors affecting good and bad air quality (AQ).
- Recognize the environmental justice and public health effects of particulate matter.
- Understand how AQ is regulated, monitored, and measured.
- Explore the foundations, strengths, and weaknesses of community science AQ monitoring.
- Utilize low-cost air quality monitors (and mobile apps) for stationary and personal AQ monitoring.

Required materials/Tech

- A smartphone with either Android or iOS software

Outcomes/Products

The discussions and exercises in this workshop will provide participants with a community science air quality monitoring "toolkit" that includes:

- Insights on how to apply community science air quality monitoring in their specific areas.
- A step-by-step framework for developing a community air quality monitoring plan.
- Online resources for comparing low-cost air quality monitors in price and utility.

Workshop Abstract

It is a fact that constant exposure to air pollution presents a high cost to human health. On average, low-wealth communities and communities of color are regularly exposed to the highest concentrations of polluted air. Historically, these populations have not had access to data to prove they are suffering from environmental injustices. With the rise of community science and low-cost air quality monitoring sensors, though, EJ communities can now collect their own data and use it to advocate for change. The Community Engagement, Environmental Justice, and Health (CEEJH) Lab combine these tools with community-based participatory research to empower residents of communities of color and low-wealth communities to collect and interpret their own environmental health data. This training will consist of a primer on air quality, air pollution, and environmental justice, as well as interactive demonstrations of the PA-II (manufactured by PurpleAir), Flow (manufactured by Plume Labs), and Airbeam2 (manufactured by HabitatMap). Participants in this workshop will use a variety of low-cost stationary and personal air quality monitors and learn how to apply them in their communities.

Vaping Materials, Resources, and Communication Workshop

Lead Presenter: Ann Backus, Harvard Chan-NIEHS Center for Environmental Health

Co-Presenters: Judith Zelikoff, NYU School of Medicine Department of Environmental Medicine – NIEHS Core Center; Kimberly Manning, Region I PEHSU, Boston Children's Hospital; Marissa Hauptman (not in attendance), Region I PEHSU, Boston Children's Hospital

Learning Objectives

Participants will examine currently available materials and assess gaps in these materials and resources.

Required Materials

- Participants who plan to attend the Vaping Materials/Resources Workshop, should bring hard copies of vaping-related materials and a list of apps and videos they are using or know of for the following audiences: parents, teachers, and health professionals.

Outcomes/Products

The goals of this workshop are to

- Discuss materials/resources brought by workshop participants.
- Undertake a gap analysis of materials/resources brought to the workshop.
- Collaboratively create a generic checklist to guide vaping materials development.

Workshop Abstract

Electronic nicotine delivery systems (ENDS) come in all shapes and sizes. Some of the names for the different products include Personal Vaporizers, Vape Pens, Vape Boxes, Vapes, Tank Systems, E-Hookah, Hookah Pen, Hookah Stick, Shisha Stick, JUUL, Mechanical Mods, E-Cigars, and E-Pipes. E-Cigarettes can resemble traditional tobacco products like cigarettes, cigars, and pipes; or common gadgets like flashlights, flash drives, pens, fobs, and inhalers. These devices, while delivering similar chemical components, may deliver different amounts of nicotine, and may heat at different temperatures. The chemical compounds in e-cigarette devices vary between brands, and the use of different voltages from device to device can change the chemistry of the aerosol. E-liquid from e-cigarettes and refill packs can contaminate skin, leading to nicotine poisoning.

The number of pre-teens and teens who are vaping is worrying their parents, school personnel, health care providers, and non-profit organizations. Recent reports of serious and potentially fatal lung illnesses and injuries have drawn attention to the issue, even among young users. A variety of entities have stepped in to develop materials, programs, apps, videos, and social media. This workshop will allow participants to examine existing materials, and consider where information gaps are.

Using Interactive Maps to Make Invisible Air Pollution Visible for Community Residents

Lead Presenter: Carolyn Wong, Tufts University School of Medicine Department of Public Health and Community Medicine

Co-Presenter: Doug Brugge, University of Connecticut

Format: Discussion

Learning Objectives

- Learn about an interactive map of ultrafine particle concentrations for Boston Chinatown
- Learn how educational methods using the interactive map can be applied to air pollution education for other population groups and communities.

Required Materials/Tech

- None

Outcomes/Products

- Describe how interactive environmental maps can be used to educate community members about invisible pollution.
- Understand the ways in which knowledge, attitudes, and beliefs can change after engaging in a community-based training that incorporates interactive pollution maps.
- Discuss possible new applications of interactive maps of other pollutants and in other communities and weigh benefits and limitations.
- Share what is learned with research teams.

Workshop Abstract

Environmental health literacy is an emerging field that is incorporating new approaches to convey information about air pollution and its risk to lay populations. Racial and ethnic minorities are disproportionately affected by air pollution and are also at a disadvantage in terms of accessing information and acting to reduce their risk. Specifically, communities of color and linguistic minorities are more likely to live near major roadways and to be exposed to traffic-related air pollution. Maps, both static and interactive, are increasingly being used to convey air pollution information to the public. We developed an interactive map of ultrafine particle concentrations for Boston's Chinatown neighborhood as part of the Community Assessment of Freeway Exposure and Health Study (CAFEH).

Our map was based on a predictive model of ultrafines, created through extensive mobile monitoring in the neighborhood. Predictive variables included wind speed and direction, temperature, and traffic volume. The model was used to assign exposure to ultrafines for Chinatown residents as part of an NIEHS-funded epidemiology study that has been published. The interactive map was presented along with other educational materials to adolescent and adult Chinese immigrants for a pilot study funded by the National Library of Medicine. Results of the pilot trial were highly encouraging in terms of influencing knowledge, attitudes, and beliefs of participants. The work was recently published in the Journal of Health Communication. This session will be based on the above research and will encourage participants to share their own experiences and ideas for using interactive maps in other contexts. The session will be relevant to the fields of health literacy, cultural competency, and environmental health and will aid participants' engagement of immigrant communities in the communication of complex environmental health information for understanding and action.

Assessing and Strengthening Environmental Health Literacy: Approaches from the Field

Lead Presenter: Anna Hoover, University of Kentucky

Co-Presenter: Kathleen Gray, University of North Carolina at Chapel Hill

Format: Other

Learning Objectives

Following this workshop, participants will be able to:

- Define Environmental Health Literacy (EHL).
- Describe the bidirectional connections between research report-back and EHL.
- List three approaches EHL researchers and practitioners use to assess baseline EHL and establish EHL targets.

Required Materials/Tech

- Workshop participants may wish to take notes – either by hand or laptop – during break-out discussions.

Products

- Workshop organizers and interested participants will generate a journal commentary reporting workshop outcomes.

Workshop Abstract

The field of environmental health literacy (EHL) focuses on the knowledge and skills people need to protect their health from potentially harmful environmental exposures. EHL encompasses both the assessment of context-specific knowledge gaps and the creation and dissemination of evidence-based, understandable, and targeted resources and programs that address the information needs of diverse audiences, from health care professionals and policymakers to educators and lay audiences. Using a combination of presentations and facilitated group discussions, session moderators will describe methods, emerging findings, and lessons learned from a suite of studies that address EHL for different contexts, including water contamination and endocrine-disrupting chemicals. The tools and protocols developed and used in these studies will serve as prompts for break-out discussions in which participants will identify critical target audiences, collaborations, and opportunities for further strengthening EHL praxis. Interested workshop participants will be invited to contribute (in accordance with defined authorship guidelines) to a journal commentary describing workshop outcomes; with permission, other workshop participants will be recognized in the manuscript's acknowledgments.

Youth Engagement in Environmental Citizen Science and Advocacy Training in Rural and Urban Areas

Lead Presenter: Ellen Hahn, University of Kentucky (UK-CARES)

Co-Presenters: Susan Pinney, University of Cincinnati (UC) Center for Environmental Genetics (CEG); Kathryn Cardarelli, UK College of Public Health; Melinda Ickes, UK College of Education; Angela Larck, UC CEG; Craig Wilmhoff, Perry County Central High School

Format: Small Group Activity

Learning Objectives

At the end of this workshop, participants will be able to:

- Compare and contrast approaches to engage youth in environmental health promotion, science communication, advocacy, and research.
- Identify critical characteristics of effective youth-engaged approaches to reduce environmental health inequities in rural and urban environments.
- Identify ways to integrate citizen science and advocacy training into ongoing youth engagement efforts.
- Identify resources and inspiration for youth engaged hands-on activities.

Required Materials/Tech

- None

Outcomes/Products

- Mapping exercise to apply lessons learned to their own work in youth engagement and to begin an action and evaluation plan.
- Program characteristics and hands-on activities used with youth to overcome common barriers and challenges.

Workshop Abstract

Training youth in environmental health (EH) engages and inspires them to tackle health promotion and policy change. The workshop's purpose is to analyze examples of citizen science, science communication, and advocacy approaches with rural and urban youth to empower them to promote EH in schools and communities. Four youth-engaged projects in rural (Central Appalachian KY) and urban (Cincinnati, OH) communities will be briefly described: two testing citizen science approaches using photovoice and environmental sampling; one testing a medical camp on EH science communication; and one training in policy advocacy.

Two projects tested citizen science approaches using photovoice and environmental sampling. The Mountain Air Youth Photovoice Project trained teenagers in photography methods to identify and capture powerful images and adjoining narratives highlighting environmental risk factors for respiratory illness. The UK-CARES Citizen Science Project recruited and trained biology students and teachers to design school-, community-, and home-based sampling strategies to collect and report back particulate matter and radon data. The project on EH in science communication involved EH graduate students, linked to 5th-8th graders at Cincinnati Museum Center's annual Medical Camp to promote EH using hands-on activities. The project on training in policy advocacy involved the Tobacco Ambassador Partnership, which recruited and trained high schoolers and adult mentors to be informed, effective advocates with peers, adults, and policymakers to reduce tobacco smoke exposure.

Workshop participants will select one of the four projects and engage in small group discussions about how to apply similar approaches to youth-related EH promotion, science communication, advocacy or research. We will prompt discussion about the critical characteristics of effective youth-engaged approaches to reduce EH inequities as well as common barriers and challenges.

Youth demonstrate a strong desire and agency to learn about and impact EH issues in their communities by engaging in citizen science and advocacy. Being introduced to citizen science strategies such as photovoice, air quality testing, and report back, as well as science communication and advocacy strategies can impact self-efficacy to participate in EH initiatives. Findings reinforce the need for evaluation, integration into existing educational programming, and experiential and timely learning. Implications for connecting graduate students with youth, working with schools and youth-based organizations, and the need for adult mentors such as teachers, parents, and other engaged adults living in the community.

Session II

Translating Sensor Air Pollution, and Health Data to Action with Communities, Youth, and Healthcare

Lead Presenter: Ananya Roy, Environmental Defense Fund

Co-Presenter: Elena Craft, Environmental Defense Fund

Format: Small Group Activity

Learning Objectives

- Discuss best practices for translating scientific information to inspire action.
- Describe the importance of partnerships and context.
- Design a communications plan with respect to message, audience, messenger, method of delivery, context and target action.

Required Materials/Tech

- None

Outcomes/Products

- Participants will work through a framework for working with or communicating air pollution sensor-related scientific findings with key community members to inspire action.

Workshop Abstract

High-resolution air pollution sensors are rapidly advancing urban exposure, epidemiology and risk science. Microscale measurements pave the way for effective risk communication, mapping exposure and health impacts at the block level which make disparities visible and personal. This workshop will draw case studies from Environmental Defense Fund's (EDF) work to illustrate how scientifically robust air quality and health data have been used to mobilize communities and encourage increased civic engagement to improve air quality (Making the Invisible Visible, Environmental Defense Fund).

The first case study will examine EDF's partnership with the West Oakland Environmental Indicators Project to incorporate hyperlocal traffic-related air pollution and health impacts data into community action plans for implementation of AB617 funding in California. The second will examine and EDF's partnership with the City of Houston to develop the context for health risks and community measurements of benzene and other pollutants following recent industrial events, as well as the development of the Environmental Youth Council to increase student understanding of air quality and human health; promote youth civic engagement; and raise the profile of air quality issues and support of community based organizations in their development of environmental justice action plans through data integration, visualization, and mapping.
We will discuss best practices for translating scientific information to inspire action. This includes methods for developing materials and strategies for communicating the information for target audiences through an outreach plan. We will outline the significance of developing sustained partnerships and working with community partners to interpret and use scientific data in the local context. Workshop participants will learn the practical skills of designing a communications plan with respect to message, audience, messenger, method of delivery, context and target action. Case study presentations will be followed by small group exercises to apply the framework to workshop participants' own work. Small groups will report back and engage in a discussion of opportunities and barriers.

Building Educators' Capacity to Explore the Health Effects of E-cigarettes with K-12 Students

Lead Presenter: Dana Haine, UNC-Chapel Hill

Co-Presenter: Lisa Hayward, University of Washington

Format: Small Group Activity

Learning Objectives

Participants will be able to:

- Describe the components of vaping liquids and inhaled e-cigarette aerosols.
- Describe the health risks associated with the components of vaping liquids and inhaled e-cigarette aerosols.
- Describe two interactive activities designed to teach middle/high school student groups about the harmful effects of vaping.
- Explain key aspects of developing an activity that incorporates published scientific data.

Required Materials/Tech

- Participants are encouraged to bring their laptops to the workshop, although having a laptop is not a requirement as participants will work in small groups.

Outcomes/Products

- Participants will receive two interactive activities designed to teach middle/high school students about the harmful effects of vaping.
- Participant feedback will inform future improvements to each activity as well as help workshop facilitators identify additional avenues for dissemination.
- Participation in this workshop will build the capacity of PEPH members to address vaping in their work.

Workshop Abstract

Electronic, or e-cigarettes, are devices that deliver nicotine, tetrahydrocannabinol (THC), flavorings, and other additives to users through an inhaled aerosol, in a process known as vaping. According to the Center for Disease Control and Prevention (CDC), an estimated 5 million US middle and high school students reported using e-cigarettes in 2019, an increase of 1.4 million youth over 2018. This trend has raised concern in public health circles about youth addiction to nicotine from e-cigarette use and unknown respiratory effects of e-liquid constituents such as flavorings. In light of the recent outbreak in vaping-related lung illnesses and subsequent deaths, the need to educate youth about the harmful effects of inhaling aerosols from e-cigarettes has become even more urgent. Fortunately, K-12 science and health teachers are well-positioned to engage adolescents in learning about e-cigarettes and the potential health effects of inhaled aerosols. The Community Engagement Cores (CECs) for the UNC Chapel Hill Center for Environmental Health and Susceptibility (CEHS) and for The Center for Exposures, Diseases, Genomics, and Environment (EDGE) at the University of Washington Schools of Medicine and Public Health have been engaging with Center scientists to share emerging science on the respiratory health effects of inhaling aerosols from e-cigarettes with K-12 audiences. In this interactive session, we will describe and model the implementation of two classroom activities that were developed in 2019, in concert with and piloted by health and science teachers, respectively. First, we will describe a computer-based activity designed for use in a health classroom where students attempt to break out of a virtual escape room while learning about the harmful effects of vaping. Next, we will describe a data interpretation activity developed for high school biology classrooms in which students examine evidence that e-liquids and aerosols impair the respiratory immune system. We also will highlight the process of developing a lesson that incorporates published scientific data.

Using Maps to Introduce Environment and Health Data to Youth

Lead Presenter: David Chang, Tracking California

Co-Presenter: Taylor Morton, WE ACT for Environmental Justice

Format: Small Group Activity

Learning Objectives

- Discuss how maps can be used as a visual learning tool to disseminate scientific information (pros and cons, ways they've used maps in their own work).
- Tell a story using maps in hand to question underlying social and environmental conditions.
- Examine how students have interpreted maps through the lens of WE ACT for Environmental Justice and Tracking CA's own work.
- List activities, tools, and mapping applications they themselves can use with youth in their home state.

Required Materials

- We encourage participants who may have used maps in their community engagement work to bring them to share with the rest of the group; however, participants do not need to bring any materials to the workshop aside from pen and paper.

Outcomes/Products

- Participants will examine maps/data from Tracking CA/NYC and other National Environmental Public Health Tracking sites.
- Participants will list products or multimedia tools that youth can use (story maps, songs, videos, etc.).
- Participants will generate a list of sample activities to take back to their team.

Workshop Abstract

Tracking California's mission is to mobilize data to improve public health. Our two core functions include developing and disseminating materials to communicate environmental and health data to a broad range of stakeholders and engaging with stakeholders to increase environmental and health knowledge and capacities. Tracking California is part of a larger network of state tracking programs that collectively make up the National Environmental Public Health Tracking Network, funded by the Centers for Disease Control. Like other programs in this network, Tracking California emphasizes the dissemination of scientific information via our web-based portal that houses a number of interactive maps/data on a wide range of environmental health topics. These maps provide an opportunity for different audiences to look at environmental hazards in their neighborhoods in new and exciting ways. Tracking California will highlight its experiences working with students from the Youth Environmental Health Internship Program in Imperial County to interpret air pollution maps/data. Tracking CA will also highlight its experience working with Oakland International High School students, who pulled information from Tracking California's portal.

WE ACT for Environmental Justice uses maps/data from the NYC Environmental Health Tracking Portal in its Environmental Health and Justice Leadership Training Program. Serving as co-facilitators in this workshop, WE ACT will highlight students' use of maps to further develop individual research projects on environmental justice issues that are present in the communities of Washington Heights and the South Bronx. To assess prior knowledge, WE ACT and Tracking California will facilitate a discussion with participants about how maps have been used successfully or unsuccessfully in different youth settings. The facilitators of the workshop will walk participants through a series of small group activities modeled after the curriculum that WE ACT and Tracking CA have implemented with youth.

Social Media: An Important Tool for Environmental Public Health Outreach and Engagement

Lead Presenter: Brenda Koester, University of Illinois at Urbana-Champaign

Co-Presenters: Nathan Mutic, Emory University; Wendy Gutschow, University of Southern California

Format: Other

Learning Objectives

- Understand the value of social media as a tool for communicating environmental/public health content.
- Describe the basic components of a social media strategy.
- Understand the difference between popular social media platforms.
- Define social media objectives.
- Identify two strategies for engaging an audience.
- Recognize the two benefits of utilizing tools for increasing efficiency in dissemination of social media content.
- Describe two ways to measure the reach and impact of social media efforts.

Required Materials/Tech

To take full advantage of this workshop, participants should bring:

- A charged laptop or tablet.
- Login information for their organization's social media account(s) (only if social media account(s) are current).
- Content-specific to their research or community engagement work that could be translated and shared on social media (e.g., grant proposal, recent publications, community engagement programs).

Outcomes/Products

Participants will:

- Create a draft social media strategy and implementation plan including milestones.
- Identify appropriate social media platforms to reach their target audience(s).
- Create compelling social media content based on their organization's current research or programmatic focus.

Workshop Abstract

Social media is emerging as a necessary tool for public and environmental health communication as more Americans utilize the internet and social media to search for health information. According to the Pew Research Centers Social Media Use report, 79% of all United States adults who access the internet use Facebook. Social media users report that social media is an important way that they get science news (33%). This workshop will highlight the value of social media as a tool for community outreach and translation of environmental health-related content. The format will be a blend of lecture and practical individual and small group exercises designed to walk participants through the process of drafting a social media strategy. Our team of presenters, which includes Brenda Koester (Illinois), Wendy Gutschow (USC), and Nathan Mutic (Emory), will share a case study of how the Children's Environmental Health Research Centers and the Pediatric Environmental Health Specialty Units worked together to increase network capacity for utilizing social media as an outreach tool to disseminate environmental health content. They will share lessons learned and best practices for identifying target audiences, identifying appropriate social media platforms, defining social media objectives, creating strategies for creating compelling content, utilizing tools to increase

efficiencies, and monitoring and measuring the reach and impact of an organization's social media efforts. This workshop is appropriate for individuals and organizations with all levels of social media experience and expertise. Participants will be provided with a workbook that we will use throughout the workshop. Upon completion of the workshop, attendees will have a framework for developing a social media strategy and an outline of implementation milestones.

Natural Disaster Response and Recovery as an Environmental Justice Issue

Lead Presenter: Joseph "Chip" Hughes, NIEHS Worker Training Program

Co-Presenter: Sharon Beard, NIEHS Worker Training Program

Format: Small Group Activity

Learning objectives

Upon completion, participants will be able to:

- Describe the relationship between natural disasters and environmental justice concerns.
- Recommend the public health actions for improving the protection of disadvantaged communities through disaster response programs.
- Summarize the contents and use of the NIEHS Disaster Response training curriculum.

Required materials/tech

- Familiarity with NIEHS Disaster Response training apps: https://tools.niehs.nih.gov/wetp/index.cfm?id=2536
- NIEHS WTP and Hurricane Sandy Response Lessons Learned: https://tools.niehs.nih.gov/wetp/public/hasl_get_blob.cfm?ID=9939#sthash.GPOGbMG4.dpuf
- HAZMAT Disaster Preparedness Training Program (HDPTP): https://www.niehs.nih.gov/careers/hazmat/training_program_areas/hdpt/index.cfm

Outcomes/products

Workshop Abstract

The EJ and Natural Disasters Subcommittee was created by the EJ IWG to bring Federal officials together to assess the major EJ issues and identify time-sensitive solutions to address natural disaster preparedness, response, and recovery in vulnerable, overburdened, and underserved communities. The Subcommittee has focused on a variety of natural disasters, e.g., major floods, hurricanes, earthquakes, tornadoes, and wildfires, and how to minimize the impact of these disasters on vulnerable populations. Natural disasters can have disastrous consequences and leave lasting damage to these communities. The Subcommittee is working on action items and implementation processes which will help to minimize and even prevent these impacts in the future.

The final product will be a report which defines the best approaches to address EJ concerns in vulnerable, overburdened, and underserved communities related to natural disaster preparedness, response, and recovery, with major EJ IWG findings and recommendations for future improvements in addressing EJ concerns and needs.

The small group discussions in this session will be facilitated by EJ IWG members (Beard and Hughes) and will focus on participants' past experience with natural disasters and what they taught us about what needs to be done to better prepare vulnerable communities for future natural disasters. We will explore what capacity building, training, technical assistance or other support can government agencies (Federal, State, Local, Tribal) provide to vulnerable communities in natural disaster preparedness, response, and/or recovery. Discussions will focus on developing a model capacity building, training, and technical assistance program for vulnerable community natural disaster preparedness, response, and recovery, as well as capture model partnerships and alliances between Federal, State, Local, and Tribal government agencies, and local vulnerable communities to help ensure that EJ perspectives and concerns are incorporated into the disaster response and recovery process for all levels of government.