



National Institute of
Environmental Health Sciences



Partnerships for Environmental Public Health Annual Meeting

Reporting Back Research Results

December 13-14, 2018

NIEHS Building 101, Rodbell Auditorium
111 TW Alexander Drive, Research Triangle Park, N.C.

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Welcome

Welcome!

Community engagement has been a long-standing component of the National Institute of Environmental Health Sciences' (NIEHS) mission. Since 1994, NIEHS has promoted the development and use of community-engaged research approaches to address a range of environmental public health issues. This commitment is reflected in the support of the Partnerships for Environmental Public Health (PEPH) Network and the inclusion of the topic in the 2018-2023 Strategic Plan.

As NIEHS-funded projects using community-engaged research approaches advanced, the challenges and benefits of reporting back research results to those who participate in research studies came to light. While other research fields, such as genetics and genomic research, had been addressing ethics of report-back since the early 1990s, environmental health sciences began to examine this tension of reporting back results in the early 2000s. The principles of community-based participatory research (CBPR), formulated by leading researchers and community advocates, highlighted the importance of open communication to build trust and shared ownership. These principles aligned with the increased desire of research participants to learn about their exposure data. However, academic researchers and Institutional Review Boards (IRBs) expressed concerns about reporting back research results to research participants, especially when health implications were uncertain and could increase participant anxiety.

The number of projects reporting back research results to their partners continues to grow. This meeting highlights a diversity of projects that involve some form of report-back.

PEPH Goals

The purpose of the Partnerships for Environmental Public Health (PEPH) 2018 meeting is to enable meaningful dialog on the important topic of reporting back research results. Grantees across the PEPH Network are dealing with various stakeholders involved with, and issues related to, returning research results (such as ethical, cultural, social and scientific considerations). During this meeting, participants will learn from one another, share approaches, discuss challenges, and examine how the network of PEPH grantees can help to inform the broader conversation.

Meeting Goals:

1. Examine principles of decision-making about reporting back results
2. Address ethics of reporting back research results
3. Clarify issues regarding reporting back results and IRBs
4. Develop a list of promising practices

Meeting Overview

The meeting has been organized so that sessions build-off one another.

Session #1, “Why Report-Back: Unique Contributions of Environmental Health Sciences,” sets the stage for the overarching meeting. It is designed to get us to think about WHY reporting back research results is important to research participants as well as to the science. We will hear about the historical evolution of report-back and the unique contributions of environmental health sciences. We will also hear the researcher and the community perspectives.

Session #2, “Reporting Back: An IRB Perspective,” will focus on the key step in the research process, getting IRB approval. The goal of this session is to raise awareness of report-back issues and promote a dialog between IRBs and researchers using community-engaged approaches.

Session #3, “Roles in Reporting Back: Challenges and Solutions,” acknowledges other partners that must be considered when reporting back research results. This session focuses on implications of reporting back research results for healthcare and public health professionals, as well as the role of the media in communicating research findings.

Sessions #4, “Promising Practices: Individual Report-Back,” and **#5**, “Promising Practices: Community-level Report-Back,” highlight the work that has been or is being done. These sessions provide approaches being used to report back research results to individuals and communities.

The poster sessions are organized to facilitate interactions among meeting participants. All posters will be put up on Thursday before lunch. The odd numbered posters will be staffed on Thursday (4:30-5:30 pm) and the even numbered posters will be staffed on Friday (1-2 p.m.). The report-back focused posters will be displayed in the NIEHS lobby. The posters addressing other environmental health science topics and approaches will be displayed in the Rall Mall.

Appreciation

Thanks to all the help and contributions from our planning team and session leaders.

Marilyn Howarth, University of Pennsylvania
Brenda Koester, University of Illinois
Katrina Korfmacher, University of Rochester
Robert Laumbach, Rutgers University
Katy May, North Carolina State University
Esther Min, University of Washington
Susan Pinney, University of Cincinnati
Diana Rohlman, Oregon State University
Carmen M. Vélez Vega, University of Puerto Rico
Judith Zelikoff, New York University
Sharon Beard, NIEHS
Jennifer Collins, NIEHS
Symma Finn, NIEHS

Kimberly Gray, NIEHS
Michelle Heacock, NIEHS
Heather Henry, NIEHS
Mike Humble, NIEHS
Alfonso Latoni, NIEHS
Kristi Pettibone, NIEHS
Molly Puente, NIEHS
Brittany Trottier, NIEHS
Amy Acosta, NIEHS Contractor: MDB, Inc.
Megan Avakian, NIEHS Contractor: MDB, Inc.
Justin Crane, NIEHS Contractor: MDB, Inc.
Suzanne France, NIEHS Contractor: MDB, Inc.
Kerri Voelker, NIEHS Contractor: MDB, Inc.



Agenda



Partnerships for Environmental Public Health Annual Meeting

Reporting Back Research Results

December 13-14, 2018

NIEHS Building 101, Rodbell Auditorium • Research Triangle Park, N.C.

AGENDA

Day One – Thursday, December 13

8:00 a.m. **Registration** (*Building 101 Lobby*)

9:00 a.m. **Session One Workshops**

Building Environmental Health Literacy: What Should People Know About Endocrine Disrupting Compounds? (*Lakeview Conference Room*)

Julia Brody and Katie Boronow, Silent Spring Institute

Using Policy Briefs to Present Scientific Results of Community-Based Participatory Research (*Room D350*)

Thomas Arcury and Sara Quandt, Wake Forest School of Medicine

Advancing Environmental Health Literacy Through Interactive, Hands-On Science Kits for Use With Community Audiences (*Rodbell B*)

John Prochaska and Chantele Singleton, University of Texas Medical Branch

Return of Research Results to Individual Participants in Dine and Hopi Communities (*Rodbell A*)

Mary Kay O'Rourke, Adam Carl, Steve Hadeed, Nathan Lothrop, Yoshira Ornelas Van Horne, University of Arizona

10:15 a.m. **Break and Transition Into Workshop Session Two**

10:30 a.m. **Session Two Workshops**

Tools For Measuring Environmental Health Literacy (*Rodbell B*)

Kathleen Gray, University of North Carolina at Chapel Hill

Marti Lindsey, University of Arizona

Planning Effective Engagement: An Introduction to Tools, Resources, and Best Practices (*Lakeview Conference Room*)

Lisa Hayward, University of Washington

Group Concept Mapping: Transforming Individual Experiences Into Community Knowledge for Action (*Computer Lab A012*)

Erin Lebow-Skelley and Melanie Pearson, Emory University

Partnering With Adult Literacy Programs to Develop Multi-Lingual Environmental Health Information People Can Understand and Act On (*Rodbell A*)

Sabrina Kurtz-Rossi and Doug Brugge, Tufts University

- Noon** **Lunch** (*On your own – NIEHS Cafeteria*)
- 1:00 p.m.** **Welcome and Introductions** (*Rodbell Auditorium*)
Liam O’Fallon and Gwen Collman, NIEHS
- 1:30 p.m.** **Why Report Back: Unique Contributions of Environmental Health Sciences** (*Rodbell Auditorium*)
This session sets the stage for the overall meeting by addressing the history and importance of reporting environmental health sciences research results to participants, communities, and other stakeholders. The presenters will address unique considerations for environmental health from their perspectives as researchers and advocates engaging with impacted members of the community.
- A Historical Perspective on Reporting Back and the 2018 National Academies of Sciences Guidance Report**
Julia Brody, Silent Spring Institute
- Fighting Coal Ash Pollution Across North Carolina: A Community Perspective on Report-Back**
Caroline Armijo, Community Partner for the Well Empowered Study
- Experiences Coordinating Large Prospective Research Studies: A Researcher Perspective on Report-Back**
Linda McCauley, Emory University
- The Nature of Environmental Health Results and the Diverse Standpoints on Report-Back**
Katrina Korfmacher, University of Rochester
- 3:00 p.m.** **Reporting Back: An IRB Perspective** (*Rodbell Auditorium*)
A central goal of this session is to raise awareness of specific issues related to report-back, especially the interactions between researchers and Institutional Review Boards. The session will feature representatives from a variety of IRBs to discuss their perspective about reporting back research results, as well as the challenges and the opportunities for such approaches. The session will explore how best to ensure that human subject protections are maintained while promoting the use of report-back research results.
- Session Introduction and Moderator**
Judith Zelikoff, New York University
- An Overview of Ethical and Regulatory Issues Facing IRBs**
David Resnik, NIEHS
- Native IRBs as Gateways to Open Communication in Tribal Environmental Health Research**
Esther Erdei, University of New Mexico
- What the IRB Didn’t Know**
Helen Panageas, New York University
- Environmental Impact Research: IRB Hurdles and Solutions**
Catherine Ricciardi, Massachusetts Institute of Technology
- 4:30 p.m.** **Poster Session**
Posters will be located in the Lobby and in the Rall Mall. Odd numbered posters will be staffed.
- 5:30 p.m.** **Adjourn**
Buses depart at 5:35 p.m. to return attendees to the hotel.

Day Two – Friday, December 14

8:00 a.m. **Registration** (*Building 101 Lobby*)

9:00 a.m. **Roles in Reporting Back: Challenges and Solutions** (*Rodbell Auditorium*)

This session aims to define the roles and expectations of the partners in report-back and explore best practices. It will describe in more detail the barriers and challenges from the researcher, medical, and public health professional perspectives. Through a complex report-back example, we aim to demonstrate how challenges for key stakeholders can be addressed successfully.

Partners in Report-Back: Roles and Expectations

Marilyn Howarth, University of Pennsylvania

Barriers and Challenges to Report-Back From the Medical and Public Health Perspective

Robert Laumbach, Rutgers University

Barriers and Challenges to Report-Back From the Toxicologist Perspective

Rebecca Fry, University of North Carolina at Chapel Hill

Dilemma in Reporting Back When the Values Are Very High

Susan Pinney, University of Cincinnati

10:30 a.m. **Promising Practices: Individual Report-Back** (*Rodbell Auditorium*)

This session will highlight three unique projects that have been reporting back individual results. The presentations will focus on different processes for determining, developing, and implementing their report-back approach. The three projects address unique exposures, as well as distinct cultural contexts, and the important considerations that must be made to ensure study results are reported back to participants appropriately.

Session Introduction

Michelle Heacock, NIEHS

Report Back of Personal Exposure Data in Puerto Rico

Carmen Vélez Vega, University of Puerto Rico

Individual Report Back to an Indigenous Community That Used Personal Passive Sampling Wristbands

Diana Rohlman, Oregon State University

Reporting Results of Indoor and Ambient Air Pollutants in the Midst of Uncertainty

Madeleine Scammell, Boston University

11:45 a.m. **Lunch** (*On your own – NIEHS Cafeteria*)

1:00 p.m. **Poster Session**

Posters will be located in the Lobby and in the Rall Mall. Even numbered posters will be staffed.

2:00 p.m. **Promising Practices: Community-Level Report-Back** *(Rodbell Auditorium)*

This interactive session will feature the work of several projects that have been involved in reporting research results to whole communities. During an interview-style panel, we'll hear from five speakers with a variety of experiences in reporting research results back to communities. They will describe the approaches and strategies they use to communicate research results to their communities. The second part of the session will involve table discussions about case studies. Table groups will have an opportunity to share their promising practices for communicating research results to communities with the larger audience.

Panel Session Introduction and Moderator

Pam Miller, Alaska Community Action on Toxics (ACAT)

The Rub, Developing Meaningful Partnerships Between Researchers and Community-Based Organization in Disaster Response

Lisa Orloff, World Cares

CHAMACOS Study: The Center for the Health Assessment of Mothers and Children of Salinas

James Nolan, University of California, Berkeley

Paducah Gaseous Diffusion Plant Future Vision Project

Anna Hoover, University of Kentucky

Right to Basic Amenities – Challenging the “Old South” Culture

Omega Wilson, West End Revitalization Association (WERA)

Gordie Howe International Bridge Health Survey

Sharon Sand, University of Michigan

Table Discussions Followed by Group Discussion

3:30 p.m. **Closing and Summary** *(Rodbell Auditorium)*

4:00 p.m. **Adjourn**

Buses depart at 4:05 p.m. to take attendees to the airport.



Workshop Abstracts

Building environmental health literacy: What should people know about endocrine disrupting compounds?

Lead Presenter: Julia Brody

Co Presenter: Katie Boronow

9:00 a.m. Lakeview Conference Room

Help us build a mental model of what people need to know about endocrine disrupting chemicals (EDCs). EDCs are chemicals that affect the body's natural hormones and are present in a wide range of commonly used consumer products, including food packaging, personal care products, cleaners, and furnishings. By mimicking or disrupting endogenous hormones, such as estrogens, androgens, and thyroid hormones, these chemicals may harm fertility and development, influence obesity, and increase the incidence of some cancers. Medical societies, scientific consensus statements, and federal reports have called for educating the public about EDCs and reducing exposures. Individual action (such as avoiding products with EDCs) can be effective at reducing some exposures, and consumer choices and civic engagement can influence product formulations and policies for community-wide exposure reduction. To make informed decisions, however, people need sufficient knowledge about how EDCs can influence health. We refer to this as EDC environmental health literacy (EDC-EHL). The extent to which the public already knows about EDCs is largely unknown, but our previous interviews show that participants in biomonitoring studies are often surprised to learn about EDCs in their bodies and daily lives. Thus, information about EDCs may represent a significant gap in most people's environmental health literacy. In this workshop, we invite researchers and community partners who conduct community-based participatory research (CBPR) studies of EDCs to a focus group discussion about the core concepts that comprise EDC-EHL. We will discuss what people need to know about sources of EDC exposure, the biology and health effects of exposure (including uncertainty), and reducing personal and community-wide exposure. Participants in this workshop will be contributing to a research study with the goal of defining an action-oriented framework for EDC-EHL. This framework is critical groundwork for developing effective communications about EDC exposures, so that people can make informed choices about their own health and participate in community and public policy debates.

Using Policy Briefs to Present Scientific Results of CBPR

Lead Presenter: Thomas Arcury

Co Presenter: Sara Quandt

9:00 a.m. Room D350

The scientific results of community-based participatory research (CBPR) should be used to inform policy that improves health and well-being of vulnerable community. Policy briefs are one mechanism we have developed to apply CPBR results to policy changes. Our policy briefs are two-page summaries of published research that address a single policy issue using appropriate language and graphics to make the science accessible to diverse audiences. Policy brief topics are selected by community advocates, based on collaborative research, and address a specific policy or regulation. Development of a policy brief is an iterative process of discussion and revision with community representatives. We have used policy briefs to provide research results to advocates, state and national policy makers, and the public. At the end of this workshop, participants will understand the purpose of policy briefs, will be able to list the steps for developing policy briefs, and will have produced the basic components of a draft policy brief relevant to their environmental health work. This workshop will use a combination of lecture, small group activity, and discussion to introduce participants to policy briefs. The short lecture will define policy briefs, give examples of completed policy briefs, and present seven steps in developing policy briefs. The small group activity will entail workshop participants initiating the seven steps to develop their own policy briefs, individually or in small groups. Workshop participants should bring a scientific paper or program report from one of their projects (or a scientific paper that is of particular interest for the work of their organization). This paper or report will be the basis from which they develop a policy brief. After developing the key elements of a policy brief based on this paper, participants will share their policy briefs and obtain feedback from the larger group. In advance of the workshop, participants are asked to read, Arcury TA, Wiggins MF, Brooke C, Jensen A, Summers P, Mora DC, Quandt SA. Using "policy briefs" to present scientific results of CBPR: Farmworkers in North Carolina. *Prog Community Health Partnersh.* 2017;11(2):137-147

Advancing Environmental Health Literacy through Interactive, Hands-on Science Kits for Use with Community Audiences

Lead Presenter: John Prochaska

Co Presenter: Chantelle Singleton

9:00 a.m. Rodbell B

During the past year, four University-based Community Engagement Cores were funded by the National Institute of Environmental Health Sciences (NIEHS) to develop eight interactive environmental health science kits for use with community audiences. The purpose of these kits is to provide a resource for diverse community audiences to build environmental health literacy, with the goal being to create an easy to use kit that would quickly enable community groups to better understand foundational environmental health principles. For example, the kits could help build community members' ability to understand, provide context for, and act on report-back of research results. These kits cover a range of topics, including lead poisoning prevention, drinking water quality from private well and municipal sources, healthy homes, skin cancer and UV radiation exposure, and pesticide use in the home. The development of these kits included integrating input from community engagement experts and community-based stakeholders. These kits are essentially 'labs in bags' that require no special preparation by a facilitator. No additional special equipment is needed beyond a table or other flat surface to work on. The goal for these kits is to make them as accessible and easy to use as possible. They are graphically rich, story-based, involve limited reading, and integrate hands-on activities in a setting that would take approximately 20 minutes. During this workshop, we will discuss the process of developing these kits, including gaining and integrating stakeholder feedback. Possible applications of these kits will be presented, including how they potentially can be utilized to enhance interpretation of research results. The bulk of the workshop will be dedicated to allowing participants the opportunity to experience and evaluate example kits across multiple environmental health topics. We will also present challenges to developing these kits, as well as best practices that were identified during this process for utilizing these kits in various community-based environmental health education and research efforts.

Return of Research Results to Individual Participants in Dine and Hopi Communities

Lead Presenter: Mary Kay O'Rourke

Co Presenters: Adam Carl, Steve Hadeed, Nathan Lothrop, Yoshira Ornelas Van Horne

9:00 a.m. Rodbell A

The Center for Indigenous Environmental Health Research (CIEHR) returns study results to individual participants holds multiple public events to provide communities with research results and provides written documents to Tribal leaders for policy consideration. This workshop will address the short- and long-term return of specific environmental and health measurements to individual study participants. Return of these results builds trust within the community, provides actionable information to individuals and enhances environmental health dialogue among study participants. The workshop will open by surveying what attendees want to learn or discuss. Speakers will attempt to integrate these points in presentations and discussion. Ornelas Van Horne will introduce the workshop with a summary of the existing literature, the applicability of the methods, general principles, and the importance of consulting with the community about the type and amount of information returned. She will lead a group discussion to identify gaps in existing approaches. Lothrop will describe field activities using Dine Community Health Representatives to overcome cultural sensitivities, implementation of real-time methods and delayed results reports following the Gold King Mine Spill. O'Rourke will describe use of real-time monitors in homes to determine indoor air conditions in the Hopi Environmental Health Project. She will discuss providing immediate measurement results, and uncertainties associated with them. Real-time measures will be compared with delayed integrated reports and errors will be discussed. The group will discuss whether providing interim results with potential error is appropriate. Hadeed will report on the development of a standardized template for returning results, selection of comparative values and development of remediation recommendations for the residents of Hopi. The workshop attendees will be asked to consider their project and draft a template for use. Attendee questions will be addressed. Carl will present the evaluation of results returned from the perspective of the project technician, and the participant. He will describe what he learned by returning results in the Hopi community. The workshop panel will entertain questions from attendees.

Tools for Measuring Environmental Health Literacy: Understanding Toxic Metals Contamination of Groundwater

Lead Presenter: Kathleen Gray

Co Presenter: Marti Lindsey

10:30 a.m. Rodbell B

This workshop will focus on tools for measuring environmental health literacy (EHL), using report-back templates to consider the complexity of information that communities may deal with in learning about results of environmental health studies. EHL has been defined as a combination of: (a) knowledge of the health effects of a specific environmental exposure underpinned by broader understanding of environmental health science concepts, (b) the ability to seek out and use environmental health information, and (c) positive perceptions of self-efficacy related to health-promoting behaviors (Gray & Lindsey, 2018). Literacy measurements from other fields offer models for assessing the combination of knowledge and skills associated with EHL and understanding where people fall on a literacy spectrum. With health literacy, several screening tools have been developed and validated (Snow & Dibner, 2016). Among these, at least one applies a process-focused approach, combining reading comprehension and numeracy skills in analysis of a nutrition label (Weiss et al., 2005). This tool has been shown to be effective with varied populations, particularly younger adults and older English- and Spanish-speaking patients (Ramirez-Zohfeld et al., 2015; Rowlands et al., 2013). The session will start with a brief introduction to several validated health literacy tools, including a demonstration of the process-focused tool mentioned above. Next participants will try out and evaluate a prototype of a process-focused environmental health literacy tool. Finally, they will compare three report-back templates and discuss the environmental health literacy levels required to understand study results using these templates. If you are interested in understanding and measuring EHL levels in communities you work in or developing report-back templates that work for varied literacy levels, we welcome your participation in this workshop! The workshop will be led by staff of the Community Outreach and Engagement Cores (COECs) at the UNC-Chapel Hill Center for Environmental Health and Susceptibility and the University of Arizona Southwest Environmental Health Sciences Center, who are collaborating to develop tools that can be used to assess EHL in the context of toxic metals contamination of private wells and small community well systems.

Planning Effective Engagement: An introduction to tools, resources, and best practices

Lead Presenter: Lisa Hayward

10:30 a.m. Lakeview Conference Room

Effectively engaging appropriate communities in a research process can greatly increase its ultimate impacts, enhancing benefits for society while promoting the professional advancement of the researchers involved. Many tools and resources are available to help scientists engage with a range of audiences from policymakers to affected citizens, but appropriate timing is often critical to effective engagement. Therefore, engagement planning should be an important early step of project development. This workshop will help walk participants through the process of effective engagement planning and introduce a range of available tools, resources, and best practices to assist with effective engagement. Topics to be covered will include 1. Identifying key communities to engage, 2. An introduction to select engagement tools and resources, 3. Appropriate messaging, 4. Considerations related to equity and 5. Tools for evaluation. Tools, resources, and best practices will be curated from a range of sources including federal agencies, non-governmental scientific groups, and universities. Participants who join the workshop with a specific engagement goal will leave with a customized implementation plan and an increased familiarity with resources to employ during distinct phases of their project.

Group Concept Mapping: Transforming individual experiences into community knowledge for action.

Lead Presenter: Erin Lebow-Skelley

Co Presenter: Melanie Pearson

10:30 a.m. Computer Lab A012

Experience and learn the basics of Group Concept Mapping. Workshop participants will generate and organize their ideas regarding data report-back while learning about the real-world application of the methodology in a community setting. We will provide tips and lessons learned from our experience using Group Concept Mapping with low-resource Atlanta communities to identify priorities and guide community action. Concept Mapping is a methodology used to systematically collect and organize individual ideas into visual maps using multivariate statistical techniques. The maps can be used to guide planning and action. In Group Concept Mapping, each participant contributes their own knowledge or experience about a particular topic (focus prompt), individually organizes (sorts) all of the group's ideas into piles that makes sense to them, and then attaches value to (rates) each idea based on their own experience. The statistically combined sorting and rating of all participants is shared with (reported-back to) the community for interpretation, and can be used to clarify perspectives, set priorities, and plan for action. Workshop participants will learn how to use the CS Global MAX Concept Mapping software by participating in a live Group Concept Mapping session addressing report-back. By the end of the workshop, participants will 1) understand how to use Group Concept Mapping in a community setting and 2) create their own maps to guide discussion and planning on report-back in the PEPH community.

Partnering with Adult Literacy Programs to Develop Multi-lingual Environmental Health Information People can Understand and Act On

Lead Presenter: Sabrina Kurtz-Rossi

Co Presenter: Doug Brugge

10:30 a.m. Rodbell A

As an emerging field of study and practice, environmental health literacy holds promise to effectively communicate complex concepts related to health and the environment across language, literacy, and culture. Racial and ethnic minorities are disproportionately represented among those with below basic English literacy skills. Communities of color and linguistic minorities are also more likely to live near major roadways and to be exposed to traffic-related air pollution. Environmental health literacy offers a framework for promoting community engagement and facilitating the exchange of information and ideas between researchers, advocates, and community members. Communicating environmental health information while retaining scientific accuracy is not a simple task. We found limiting the amount of information and using everyday language particularly difficult when trying to communicate about ultrafine (UFP) particles in air pollution. Partnering with adult literacy programs holds promise for engaging communities and promoting communication about environmental health. The English language learners we worked with read low literacy materials about UFPs in English, Portuguese, Haitian-Creole, and Spanish. They then discussed the content and provided feedback to improve accuracy and quality of communication. English language learners were eager to apply their knowledge and experience to solve pollution problems in their community. The session we propose draws on the experience of the Community Assessment of Freeway Exposure and Health Study (CAFEH) with health literacy and community engagement processes, including developing easy to read, culturally relevant materials on traffic-related ultrafine particles (UFP). While UFPs are the example we start from, the session will encourage participants to share their own environmental health communication topics, materials, and challenges. The session will integrate best practices from the fields of health literacy, cultural competency, and environmental health to aid participants with engaging communities and communicating complex environment health information in ways people can understand and act on.



Session Abstracts

Session 1:

Why Report Back: Unique Contributions of Environmental Health Sciences

This session sets the stage for the overall meeting by addressing the history and importance of reporting environmental health sciences research results to participants, communities, and other stakeholders. The presenters will address unique considerations for environmental health from their perspectives as researchers and advocates engaging with impacted members of the community.

Session Organizers: Abee Boyles, NIEHS; Katrina Korfmacher, University of Rochester; Esther Min, University of Washington

A Historical Perspective on Reporting Back and the 2018 National Academies of Sciences Guidance Report

Julia Brody, Silent Spring Institute

Fighting Coal Ash Pollution Across North Carolina: A Community Perspective on Report-Back

Caroline Armijo, Community Partner for the Well Empowered Study

Experiences Coordinating Large Prospective Research Studies: A Researcher Perspective on Report-Back

Linda McCauley, Emory University

The Nature of Environmental Health Results and the Diverse Standpoints on Report-Back

Katrina Korfmacher, University of Rochester

Session 2:

Reporting Back: The Institutional Review Board: A Critical Aspect of Community Engaged Report Back.

The Institutional Review Board (IRB) is a critical step in oversight of all aspects of community engaged research. However, the IRB process for community engagement initiatives is often not as well-defined as it is for other research avenues. Interpretation of IRB regulations often vary by Institution, ranging from more to less traditional recommendations. The goals of this session are to raise awareness of specific IRB issues related to community engagement, individualized report back, and investigate how IRBs meet the goals and challenges associated with community engagement. A key point of this session is to raise awareness of specific issues related to report back, especially the interactions between researchers and IRBs. The session will feature representatives from a variety of institutional IRBs who will explore how best to ensure that human subject protections are maintained, while community and scientific innovations, such as report back, do not delay or prevent IRB approval. This session will articulate the challenges, opportunities and ethical responsibilities faced by both community-engaged researchers and IRB, with particular emphasis on the Report-back process. The session will close with an interactive discussion guided by targeted questions.

Session Organizers: Judith Zelikoff, New York University School of Medicine; Symma Finn, NIEHS

Session Introduction and Moderator

Judith Zelikoff, New York University

An Overview of Ethical and Regulatory Issues Facing IRBs

David Resnik, NIEHS

Native IRBs as Gateways to Open Communication in Tribal Environmental Health Research

Esther Erdei, University of New Mexico

What the IRB Didn't Know

Helen Panageas, New York University

Environmental Impact Research: IRB Hurdles and Solutions

Catherine Ricciardi, Massachusetts Institute of Technology

Session 3: Roles in Reporting Back: Challenges and Solutions

There are many stakeholders in the process of reporting back of individual and community environmental exposure results, as well as biomarker analyses. They include researchers, medical and public health professionals, community members, and the media, among others. Their expectations for and roles in report back vary. Yet less than full participation by any key stakeholder can result in a confused or disorganized message or inadequate understanding of the message, potentially leading to unnecessary fear, false reassurance, and/or loss of credibility, and trust. This session aims to define the roles and expectations of the partners in report back, and explore best practices for engagement with Community Engagement Cores. It will describe in more detail the barriers and challenges from the researcher, medical, and public health professional perspectives. Through a complex report back example, we aim to demonstrate how challenges for key stakeholders can be addressed successfully.

Session Organizers: Marilyn Howarth, University of Pennsylvania Center of Excellence in Environmental Toxicology; Robert Laumbach, Rutgers School of Public Health; Susan Pinney, University of Cincinnati College of Medicine

Partners in Report Back: Roles and Expectations

Marilyn Howarth, University of Pennsylvania

Barriers and Challenges to Report Back From the Medical and Public Health Perspective

Robert Laumbach, Rutgers University

Barriers and Challenges to Report Back From the Toxicologist Perspective

Rebecca Fry, University of North Carolina at Chapel Hill

Dilemma in Reporting Back When the Values are Very High

Susan Pinney, University of Cincinnati

Session 4: Promising Practices: Individual Report Back

This session will highlight three unique projects that have been reporting back individual results. The projects will address different exposures, study participants, and approaches used to communicate research results to the study participants. Panelists will give an overview of their projects and will highlight the strengths of the approach they used. They will describe surprises that may have occurred and challenges they experienced. Finally, they will share lessons learned and requests for assistance or additional insight. We will wrap up the session with a 30-minute question and answer period so that we can hear from meeting participants about any other approaches that have been used to communicate research results to individual participants and any challenges or issues that others have experienced.

Session Organizers: Kristi Pettibone, NIEHS; Carmen Vélez Vega, University of Puerto Rico; Alfonso Latoni, NIEHS; Michelle Heacock, NIEHS

Session Introduction

Michelle Heacock, NIEHS

Report Back of Personal Exposure Data in Puerto Rico

Carmen Vélez Vega, University of Puerto Rico

Individual Report Back to an Indigenous Community That Used Personal Passive Sampling Wristbands

Diana Rohlman, Oregon State University

Reporting Results of Indoor and Ambient Air Pollutants in the Midst of Uncertainty *Madeleine Scammell, Boston University*

Session 5: Promising Practices: Community-level Report Back

Community engagement is at the heart of just about all PEPH-related projects. Often, we find that environmental exposures affect whole communities, not just individuals. During this interview-style session, we'll hear from five panelists with a variety of experiences in reporting research results back to communities. Pam Miller, from Alaska Community Action on Toxics (ACAT) will moderate this discussion. She will ask questions that provide panelists with an opportunity to describe the approaches and strategies they use to communicate research results back to their communities. We'll tackle issues like responding to the media, dealing with industry, and evaluating your efforts. After the interview portion of the session, panelists will step down and will moderate a case study discussion at each table. Tables groups will have an opportunity to share their promising practices for communicating research results to communities with the larger group as the wrap up for this session.

Session Organizers: Kristi Pettibone, NIEHS; Sharon Beard, NIEHS

Panel Session Introduction and Moderator

Pam Miller, Alaska Community Action on Toxics (ACAT)

The Rub, Developing Meaningful Partnerships Between Researchers and Community-Based Organization in Disaster Response

Lisa Orloff, World Cares

CHAMACOS Study: The Center for the Health Assessment of Mothers and Children of Salinas *James Nolan, University of California, Berkeley*

Paducah Gaseous Diffusion Plant Future Vision Project

Anna Hoover, University of Kentucky

Right to Basic Amenities – Challenging the “Old South” Culture

Omega Wilson, West End Revitalization Association (WERA)

Gordie Howe International Bridge Health Survey

Sharon Sand, University of Michigan

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1 Engaging Youth Perspectives in the Dissemination of Research Results: The Hired Child Farmworker Study

Taylor Arnold, Wake Forest School of Medicine

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Focus: Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

This poster outlines past and future processes of reporting research results to multiple stakeholders in an ongoing Community-Based Participatory Research (CBPR) research program examining health and safety of hired Latino child farmworkers in North Carolina. The study is a partnership between Wake Forest School of Medicine investigators and a farmworker advocacy organization, Student Action with Farmworkers (SAF). Farmworker youth from SAF's Levante Leadership Institute serve as the youth advisory board for the study, and two alumni of the Levante program serve as youth co-investigators on the study. Working with academic investigators, youth co-investigators report ongoing study results to the Levante advisory board using the leadership skills they acquire through the program. During workshop sessions, the Levante advisory board simultaneously receive preliminary results and advise academic investigators on future aspects of data collection. The iterative process of creatively returning results during ongoing data collection ensures the youth remain involved and engaged throughout the process. The final year of the study (2020) will be devoted to dissemination of results. Levante members will develop theater- and arts-based materials to disseminate study results to diverse audiences ranging from rural towns to academic and policy institutions.

Eunice Kennedy Shriver National Institute Of Child Health & Human Development
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2 Child Care Center- and Individual Child - Level Pesticides Assessed at Baseline and Post-Intervention

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Focus: Biomonitoring/Individual Reporting, Community/Partner Level Reporting, Evaluation

Abstract:

Chronic, low level indoor pesticide exposures are associated with adverse health outcomes in children, including cancer and cognitive, neurological, and respiratory problems. Studies show that pesticides applied as sprays are used in child care facilities exposing young children and staff to harmful chemicals. Interventions to reduce pesticide exposure in child care centers have focused on integrated pest management (IPM) but have not included measures of pesticide levels in the centers or children's individual exposures. A randomized-control trial in four northern California counties was designed to compare changes in pesticide exposure between centers assigned to an IPM intervention versus attention control intervention on physical activity. Eighty-eight centers serving socio-economically and ethnically diverse preschool-age children will be enrolled over 5 years. The child care health consultation intervention includes an educational workshop, materials and tools, and center-specific consultation over seven months. The study aims are to determine if a nurse-led IPM intervention (1) increases child care center staff's IPM knowledge, (2) improves center's IPM policies and practices, (3) reduces pest problems (i.e., pests present, pest residue), (4) increases director's self-efficacy, (5) reduces pesticide exposures in child care center environments, and (6) reduces child-level pesticide exposures in the intervention child care centers compared to the control centers. In year one, baseline and post-intervention measures included director interviews, self-efficacy surveys, family surveys, and assessments of IPM policies, practices, presence of pests, and on-site products. Child measures included height, weight, activity level, and silicone wristbands to measure 13 pesticides: Dacthal, Chlorpyrifos, Diazinon, Malathion, Fipronil, Bifenthrin, Cyfluthrin, Cypermethrin, cis-Permethrin, trans-Permethrin, Deltamethrin, Esfenvalerate, Lambda-Cyhalothrin. Dust samples in each center were collected at baseline and post-intervention. The dust detection frequencies (DF) in 11 centers showed a range of pesticides across time and groups for Diazinon

(<DF), Chlorpyrifos (100%), Dachtal (<DF), Fipronil (95%), Bifenthrin (81%), Sumithrin (<DF), Cyfluthrin (<DF), Cypermethrin (9%), cis-Permethrin (52%), trans-Permethrin (58%), Lambda-Cyhalothrin (43%), D-Allethrin (<DF), Deltamethrin (4%), Esfenvalerate (<DF), Chlorfenapyr (19%), and Piperonyl Butoxide (38%).

NIEHS R01ES027134

3 Evaluation of Report-Back Tools for Sharing Participant Results From Passive Wristband Sampling for Polycyclic Aromatic Hydrocarbons (PAH)

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Focus: Biomonitoring/Individual Reporting, Evaluation, Specific Report Back Process or Product

Abstract:

Background: The importance of reporting results back to participants in environmental health science studies has been widely recognized. We collaborated with partners at Oregon State University, using report templates and a video presentation to share individual results from passive sampling silicone wristbands for PAHs, common air pollutants, with 22 participants in an urban longitudinal birth cohort of women who were recruited and monitored during pregnancy.

Methods: We used surveys to evaluate the effectiveness and clarity of personal exposure result reports. We conducted two focus group style discussions to elicit participants' comments on the report itself and the overall experience of receiving their personal results.

Results: Surveys (n=14) indicated that participants expressed low prior knowledge (62%) about PAHs and exposure sources, an increase in knowledge following receipt of report (93%) and an intent to adopt behaviors to reduce exposure to PAHs (100%). Discussion among both focus groups revealed participant concerns around how exposure to PAHs is related to cancer risk, neurodevelopmental disorders, and asthma. Participants provided detailed feedback to researchers on readability of the report. Participants enjoyed the opportunity to help refine the report-back.

Conclusion: In the first instance of report- back at our Center, we evaluated report back tools using surveys and focus group discussion. Participant comments enriched our understanding of how these tools can be used by participants to reduce their exposure, increase their understanding of environmental health exposures, and how we can improve these tools to improve clarity and comprehension. Lessons learned will improve the report-back process to the full cohort of 700 individuals.

NIEHS R33 ES24718-2

4 Comprehension and Perceptions of Study Participants Upon Receiving Perfluoroalkyl Substance Exposure Biomarker Results

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Focus: Biomonitoring/Individual Reporting

Abstract:

Background: Measurement of environmental biomarkers in biomedicine is increasingly used as a method of exposure characterization in human population studies. Reporting the results of biomarker measurements back to study participants has been controversial, including questions of ethics and whether the study participants would want to receive and would understand the results.

Methods: Recently we mailed individual measurements of two serum biomarkers, perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) to participants in three exposure studies of persons living in the Ohio River Valley, of whom 60 were parents of children who had been sampled. Many had serum concentrations of PFOA above the US population 95th percentile value. Reporting forms used in the three studies were somewhat different (either tables or charts for comparison to US population values) and varied in complexity. With all reports, we included information about concentrations of PFOA and PFOS in the general population, and a survey designed to ascertain the opinions of the study participants about the information they received.

Results: Approximately 33% (273/821) returned the survey, and of those, 96% reported that they were pleased that we had sent them the report. Most (86%) responded that the results were easy to understand and the enclosed fact sheet was helpful in answering questions (87%). Regarding the amount of information, most felt that we provided the "right amount" (78%) but some "too much" (7%) and some "too little" (15%). The majority (53%) were surprised at their serum concentrations. Of those with serum values >13.0 ng/ml, 74% responded that they thought their serum concentration was "high", but only 22% of those with serum concentrations less or equal to 5.6 responded that their concentration was "low". Surprisingly, many talked to no one about their levels; those who did were most likely to discuss the report with family members.

Conclusions: Reporting back individual environmental biomarker results is generally well received by study participants, and those with high concentrations perceived them to be high. Questions remain as to why study participants did not discuss their results with others.

NIEHS

EPA RD-83478801

NIH R21-ES017176, U01-ES12770, U01-ES19453, U01-ES026119, P30-ES006096, T32-10957, T32-GM063483,
R13-ES027347

5 Returning Study Measurements to Participants of the Hopi Environmental Health Project

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Focus: Biomonitoring/Individual Reporting, Evaluation, Specific Report Back Process or Product

Abstract:

Many Hopi homes are heated by burning wood or coal in the winter. Burning increases concentrations of PM2.5 and combustion gases inside homes. Exposures can be linked to increased respiratory and cardiovascular disease. The Hopi Environmental Health Project (HEHP) measures PM2.5, NO, NO2, CO, CO2, SO2, and other contaminants in both the heating and non-heating season. Health assessments include spirometry, Fractional Exhaled Nitric Oxide (FeNO), urinary metabolites to As and U, and others. We need to return measurements to participants prior to informing the community of study results. We developed templates for environmental and health result reports to individual participants. Prior to use, the templates were reviewed by collaborators, the Community Advisory Board, the Community Engagement Core, local health care providers and the University of Arizona, Institutional Review Board (IRB). We presented each household with a booklet reporting environmental measurements collected at their homes. We described likely sources of contaminants, approaches to reduce them, and potential health effects. Concurrently, we presented participants with a sealed envelope containing their health measurements. We stressed that health measurements were collected as part of a research study, and these measurements should not be used for diagnostic purposes. We suggested that participants discuss the results with a health care provider. An initial, single summary result page was presented for both environmental and health measurements. Additional information describing the measures and remediation actions followed the summary page. We developed an IRB approved evaluation form to assess the success of our efforts to return and explain the results. Both the participant and the technician independently completed a portion of the evaluation. Technicians spent about 1.5 hours at each home presenting results to participants and answering questions. Participants were asked about the information they valued most, the clarity of presentation (clear 71%), additional information desired (50%), what to change (nothing 85%) and whether they would be willing to participate in another study (100%). 15% of participants recommended a single change that has been implemented. The technicians report

they were able to answer all questions and that people understood most of the results. Our approach enhanced environmental health literacy and empowered individuals to repair homes.

NIEHS: P50 ES026089, P30 ES006694, T32 ES007091, and EPA: R836151

6 New Hampshire Birth Cohort Study: Reporting Back Research Results for Personal Monitoring of Early Life Exposures

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Focus:

Biomonitoring/Individual Reporting, Specific Report Back Process or Product, Tools or Technology

Abstract:

The New Hampshire Birth Cohort Study (NHBCS) is an ongoing, prospective study of pregnant women and their children, and a pediatric cohort for the National Institutes of Health-funded Environmental influences on Child Health Outcomes (ECHO) program. The primary aim of the NHBCS is to investigate the effects of environmental exposures on fetal growth and development during childhood. The NHBCS has conducted targeted feedback sessions with a subset of study mothers, which revealed that participants are keenly interested in their research results. Accordingly, when we recently piloted use of a personal exposome wristband (MyExposome Inc., Corvallis, Oregon) during pregnancy and an in-person visit during early childhood, we endeavored to develop return of results materials to share with participants. Preliminary results of the MyExposome™ wristbands reveal that of 1529 detectable chemicals, the average number of chemicals found on each wristband is 25 (range 15-40), 100% of wristbands have at least one pesticide and 92% have at least one flame retardant; we are currently developing these return of results materials. During the early childhood visit, a radiologic technologist measures the child's body composition using dual-energy X-ray absorptiometry (DXA; Hologic, Inc., Marlborough, Massachusetts), and a study coordinator provides the child with devices to collect three days' worth of physical activity using the ActiGraph GT3X (ActiGraph, Pensacola, Florida) and personal air monitoring using the MicroPEM (RTI International, Research Triangle Park, North Carolina). The return of results materials following this visit include: (1) a color photo of the child's DXA on a refrigerator magnet, (2) a letter describing healthy physical activity habits for children and a graph of the results of the physical activity monitoring, including whether the child met the Centers for Disease Control and Prevention's recommendation of 60 minutes of moderate-to-vigorous physical activity per day, and (3) a chart outlining the child's personal air exposure in relation to the Navajo Area Indian Health Service (NAIHS) guidelines for air quality, specifically fine particulate matter PM2.5, black carbon, and environmental tobacco smoke; the text provides recommendations for improving air quality in the home and decreasing health risks from indoor air pollution. We also provide study contact information if participants

have any questions or concerns. The return of results materials have been met with great enthusiasm by study participants, and we are eager to share our ideas with others researchers.

NIH 5UG3 OD023275

7 Emerging Best Practices for Report-Back of Environmental Exposures: A Systematic Literature Review

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Focus: Biomonitoring/Individual Reporting

Abstract:

Purpose and Background/Significance: Understanding how study participants react to and comprehend exposure results (the report-back process) can provide researchers and healthcare professionals with needed insight into the promotion of environmental health literacy (EHL) among individuals and communities. This systematic review of the literature: (1) reviewed emerging trends in reporting environmental exposure data to individuals and communities, and (2) identified gaps in the literature related to the report-back process.

Methods:A systematic search for relevant quantitative studies was conducted using PubMed, CINAHL, EMBASE, PsychInfo, ToxLine, and Web of Science. The search was not limited by time parameters considering the recent use of the EHL perspective. The terms “environmental health literacy;” “environmental risk communication;” “report-back,” “environmental exposure,” and “biomonitoring” were used. Inclusion criteria stipulated that studies present research related to chemical exposure experiences and report-back processes. Commentaries, book reviews, qualitative studies, and non-English articles were excluded. PRISMA guidelines were used to document the systematic search results.

Results:Preliminary results included 183 studies found during the search (92 duplicates); 74 articles were excluded due to lack of relevance or categorization as commentary. Seventeen studies were included in initial review. Findings from these studies indicated that through the report-back process, participants experienced changes in their environmental risk perceptions and gained chemical exposure knowledge. Study participants generally lacked understanding of how toxins infiltrate home and body environments. Data comparison helped participants to interpret the significance of exposure levels; participants often compared personal results with those of neighboring homes.

Conclusions:The report-back process is more effective when tailored to learning styles and cultural needs of individuals and communities. Integration of teaching methodologies (e.g., graphs, text, community discussions) may enhance report-back by addressing different learning styles. Healthcare professionals need basic environmental health knowledge to answer patient questions regarding chemical exposures and risk reduction.

8 Report-Back and Other Ways of Communication With Tribal Participants and Stakeholders

Esther Erdei, University of New Mexico Health Sciences Center, College of Pharmacy, Community Environmental Health Program

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Focus: Biomonitoring/Individual Reporting

Abstract:

The Navajo Birth Cohort Study (NBCS) was a congressionally mandated collaborative research study supported by the Agency for Toxic Substances and Disease Registry (CDC/ATSDR) with research led by the University of New Mexico Community Environmental Health Program in partnership with the Southwest Research and Information Center, the CDC Division of Laboratory Sciences, the Navajo Nation Department of Health and other Navajo agencies. Enrollment was carried out through the Navajo Area Indian Health Service at six participating healthcare facilities in the Navajo Nation. The purpose of the study was to investigate birth outcomes and child development through age 1 year in relation to non-occupational exposures to uranium waste from past mining and milling operations on the Navajo Nation. One important part of the Navajo Birth Cohort Study's various community benefits was to provide individual information about the results of the ongoing biomonitoring that was conducted by using a 36-metal screening panel and sent as individual report-back letters to the participants. The letters were developed through significant input from Navajo research team members and contained many useful information and education. Emphasize was given to risk avoidance and on easy ways to prevention of metal exposures. This was also a culturally appropriate way to build environmental health literacy and knowledge base and to enhance participation and research capacity across Navajo Nation communities. Participating mothers received their own results from biological samples (blood and urine) collected during several pregnancy time points. In addition, mothers were the primary contact for the biomonitoring information about participating babies' metal exposures. We used National Health and Nutrition Examination Survey (NHANES) ranges of metal exposures but also provided Navajo community-specific comparison concentration ranges to promote participatory benefits and help participants to place their own exposures to a Navajo specific context. In addition, other support systems were developed as well explaining environmental exposures at the local Navajo Area Indian Health Service (NAIHS) clinics through

onsite Clinical Liaisons and by the implementation of 1-800 study phone line and personal discussion with participants. We also worked on summarizing the results in table format used to inform Tribal leadership, to the Navajo Nation Human Research Review Board and to the Navajo Area Indian Health Service medical providers.

CDC/ATSDR 2UO1TS000135

9 Reportback of Toxic Metals Exposure Biomarkers Among Children Living Near Battery Recycling Industry

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Focus: Biomonitoring/Individual Reporting, Specific Report Back Process or Product

Abstract:

Communities living around the last active lead-acid battery recycler located in the western US raised concerns about residential exposure pathways and the resulting public health threat. Together with the Clean Air Coalition, we developed a community-engaged study “Measuring Environmental Exposures To Assess Long-term Health Study (METALS)” to characterize individual biomarkers of toxic metal exposures among children living in the communities adjacent (within 2.5 miles) to the smelter. Toenail samples were collected from each child at the time of enrollment. Eighty-seven toenail samples were analyzed for a panel of 18 elements (As, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, Sn, u, V, Zn) by inductively coupled plasma mass spectrometry (ICP-MS) on an Agilent 7700x and reported as μg per gram of toenail ($\mu\text{g/g}$). We describe a process to develop individual report back materials to the METALS participants and families. Multiple steps were required to develop risk communication messaging and secure Institutional Review Board approval to share individual level non-diagnostic data with the participants. We raise questions about the role of individual level report back in the context of a litigious environmental between industry and community.

NIEHS 5P30ES007048

10 Returning Results of Community-Engaged Research: The Imperial County Community Air Monitoring Network

Catalina Garzon-Galvis, Tracking California

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Focus: Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

This poster presentation shares approaches used to return results to impacted community members engaged in establishing a community air monitoring network in Imperial County CA. Widely upheld as a model for conducting large-scale community air monitoring, the Imperial County Community Air Monitoring Network (ICCAMN) is a community-engaged research collaboration among community groups, academic researchers, government agencies, and nongovernmental organizations. With funding from the National Institutes of Environmental Health Sciences, the project established a network of over 40 low-cost air quality sensors that makes real-time air quality information on particulate matter levels available online via the community environmental reporting platform IVAN AIR (Identifying Violations Affecting Neighborhoods - www.ivanair.org). This poster presentation will share how results were returned in this community-engaged research project in order to build the knowledge of local residents and other impacted stakeholders in key aspects of air monitoring science and practice. Various ways of returning results of this project to impacted residents to support action to protect health and improve air quality will be described, including:

- 1) Establishing a Community Steering Committee to guide project activities such as data collection and dissemination;
- 2) Providing real-time air quality data via a web-based platform and text-based alert system;
- 3) Developing a school-based flag program to reduce students' exposures when air pollution levels are high and inform the local community about local air quality levels; and,
- 4) Returning results of scientific research and analyses based on the air monitoring data. This project has important implications within California, which recently passed climate change legislation (AB 617) that has provided increased funding avenues and opportunities for developing and expanding community air monitoring networks that integrate both meaningful community engagement and scientific rigor into design and implementation.

NIH R01ES022722

11 Collaborative Community Reportback: The "Truth Fairy" Project

Jill Johnston, University of Southern California

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Focus: Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

We describe a community-driven approach to integrate community organizing, with retrospective exposure assessment to address questions of legacy exposure to toxic metals in a working-class urban Latinx community. Coined the "Truth Fairy" project by community leaders, we describe a collaborative process to link community needs with scientists and novel analytical techniques to assess prenatal and early life exposures to toxic metals through collection of baby teeth. This community-academic partnership developed and evaluated infographic-based tools to educate the residents about toxic metal exposures, develop innovative graphics to explain the role of teeth and build the capacity of residents to leverage data to inform policy decisions. We show a the process to address important questions about community health and providing relevant research results integrated with community organizing to help exposed community members protect themselves, motivate participation in democratic processes, and influence structural change to address the underlying injustices.

NIEHS 5P30ES007048

12 Individual Results Report for Participants of Home Air in Agriculture Pediatric Intervention (HAPI) Trial

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Focus: Biomonitoring/Individual Reporting, Specific Report Back Process or Product

Abstract:

El Proyecto Bienestar, a long standing community-academic partnership guided by a Yakima Valley community advisory board (CAB) has identified pediatric asthma as a priority health concern. The Home Air in Agriculture - Pediatric Intervention Trial (HAPI) project is a randomized intervention study in the Lower Yakima Valley in Washington State. The primary goal is to reduce exposure to inflammatory agents and allergens in the homes of Latino immigrant children residing in an area of dairy- and crop-based agricultural production. The HAPI project is a collaboration between the University of Washington Department of Environmental and Occupational Health Sciences (DEOHS) and Yakima Valley community organizations, specifically Yakima Valley Farm Worker's Clinic (YVFWC) and the Northwest Communities Education Center/ Radio KDNA (NCEC/KDNA). YVFWC community health workers (CHW) recruit children with poorly controlled asthma aged six through twelve years, conduct asthma education during six total clinic and home visits, and measure asthma outcomes. NCEC/ Radio KDNA staff sample indoor and outdoor particulate matter and ammonia during the home visits. Using a community engaged approach and based on previous work by research partners, the HAPI team created two types of report back in English and Spanish: individual asthma outcome and air samples taken from homes. The asthma related measures include exhaled nitric oxide (inflammation), spirometry (lung function), and allergy test results. The asthma outcome results are given to participants immediately following the measurement verbally by the CHW during four study visits. At the end of the last study visit, the CHW reviews the participant's progress over the course of the study and provides a written summary of results is provided to each participant's family. The written summary is predominantly pictorial to allow easier understanding of the material. The baseline measurements of indoor PM2.5 and ammonia levels are provided in text and pictures relative to the concentrations measured in the study. The uncertainty involving the

measured levels are briefly discussed. The home air sample brochure also includes basic information on PM2.5 and ammonia related to asthma and actionable items for families. The CAB provided direction and feedback on the brochure for culturally appropriate and relevant messaging. This poster will share the two types of report back material from the HAPI study.

NIEHS 5R01ES023510

13 Returning Research Results to Vulnerable Populations

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Focus: Biomonitoring/Individual Reporting, Community/Partner Level Reporting

Abstract:

Environmental health researchers have a responsibility to report results to study participants. This can be difficult due to low health and science literacy in the general population, and the lack of communication training among researchers. Latino farmworkers are at considerable risk for environmental hazards, such as pesticide exposure, in their work environments. The Center for Worker Health at Wake Forest School of Medicine (WFSM) has been conducting research and providing results to farmworker participants since the early 2000's. This poster presents different culturally and linguistically appropriate formats in which the WFSM team has communicated results to Latinx farmworker research participants. Through the Preventing Agricultural Chemical Exposure (PACE) research projects, the team has returned results to participants on pesticide metabolites, olfaction, MRI results, sperm count and motility, and cognitive testing. Individual results have been returned in the form of letters and graphic representations. The WFSM team has also developed educational materials to help participants interpret results. General study results have been shared with farmworker communities through print materials on pesticide safety, videos explaining epigenetics and how different chemicals can affect our genes and cause disease, and radio broadcasts on pesticide exposure risk. Based on this experience we have learned several key lessons. 1) When possible, a combination of written results and verbal explanations work best for participant comprehension. 2) When exposures do not have a clinically "safe" level, it is helpful to provide individuals their results in comparison to the larger group. 3) Participants appreciate receiving individual study results as well as community programs, increasing their willingness to participate and remain in a study. As new research areas emerge and different scientific topics need to be explained, it is important to conduct further research on evaluation techniques that assess the usefulness and perception of the research results among vulnerable community members. It is also important to develop novel approaches that increase the health and science literacy of the general population, and specifically address vulnerable populations, which are more often exposed to hazardous occupations and poor living conditions.

14 Very High Levels of Individual Exposure Biomarkers: A Void in Guidance for Study Investigators

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Focus: Community/Partner Level Reporting, Other

Abstract:

Background: Ever improving technology allows researchers to detect ever smaller amounts environmental toxins in biomedica. This information can have far-reaching implications for participants, even if the health effects associated with the exposures are currently not well understood. Further questions arise when participant samples contain biomarker levels for exposures well above the expected limit, such as two times above the National Health and Nutrition Examination Survey (NHANES) 95th percentile. What are the implications? Some study investigators have been reporting back the personal exposure biomarker measurements to study participants, and the potential benefits and detriments of this practice have been discussed in national workshops and in published papers. An issue that has not been addressed, and for which there is no established guidance, is an unanticipated finding of a very high level of a chemical or metal in a single study participant.

Objective: To identify the medical, ethical, and legal issues presented with the finding of a very high level of an exposure biomarker in a study participant and to develop guidance for study investigators.

Methods: At a workshop in September, 2017, funded by NIEHS, we discussed the issues noted above. Should very high environmental biomarker findings be reported to the research participant's personal physician or public health officials? Are physicians equipped to answer the participant's questions? Do they even want to be involved? Do community physicians want to receive that information? Are they prepared to counsel their patients? A summary of the workshop discussion and recommendations will be presented.

Conclusions: Through further research and discussion, we hope that guidance for researchers and primary care providers will emerge.

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15 Research Challenges & Ethical Dilemmas: Reporting Back in Formative Research Stages

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Focus: Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

Background: The Safe & Just Cleaners project is a five-year community-based participatory action research (CBPAR) project that seeks to assess and reduce exposure to toxic cleaning products among Latina domestic cleaners. The project includes a survey, quantitative exposure assessments, and a multi-level campaign to reduce domestic cleaners' exposures. During the first year of the project we conducted formative research to develop items for our planned survey of 400 domestic cleaners. These research activities have raised important questions regarding reporting back formative research findings.

Methods: Data collection consisted of 5 focus groups to better understand domestic cleaners' knowledge, attitudes and work practices (KAPs) associated with cleaning products. We used thematic analysis to identify key KAPs. Participants were drawn from the membership of the project community partner, Make the Road NY, and other collaborating community organizations.

Results: Most cleaners describe adverse health effects to varying extents and are aware of health risks associated with products. Most cleaners cannot select the products they use and find it necessary to use products in ways that they know will pose more risk, while other cleaners enact their agency as much as possible, advocating for themselves with or without client awareness. Clients' and cleaners' sense of product effectiveness and time constraints may be major influences. Cleaners also reported labor-related abuses and violations, such as wage theft or being intimidated with arrest for breaking an object while working. Participants were eager to gain information about the hazards of cleaning, as well as support and suggestions from coworkers.

Discussion: Once formative data collection is complete, we plan to share preliminary findings with focus group participants, as is common practice. However, our partnership has also raised questions about how we can use the report-back process as an opportunity to engage participants in ways meaningful to them, and bridge

research activities with the campaign. Hence, as the research identifies critical training needs, how can the study team be timely in addressing knowledge gaps and exchange information while not biasing future survey respondents?

16 The Challenge of Report-back: Reporting Back 1,530 Chemicals in the Wake of Hurricane Harvey

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Focus: Biomonitoring/Individual Reporting, Specific Report Back Process or Product

Abstract:

Hurricane Harvey impacted Houston, Texas with over 50 inches of rain in a few days. Thirteen Superfund sites in the area were flooded. Reinforced by local and national media, residents cited concerns regarding chemical exposures. The Oregon State University (OSU) Superfund Research Program was contacted due to their expertise with personal passive samplers and their existing approved disaster Institutional Research Board (IRB) protocols. Within weeks of Harvey, OSU had enrolled and sampled over 30 people. This pilot was expanded into a collaborative study with Baylor College of Medicine and the University of Texas Health Science Center. Over 300 individuals were enrolled to wear a passive wristband sampler, fill out a health survey and provide biological samples. All participants requested their data. Wristbands were analyzed for 1,530 semi-volatile and volatile organic chemicals. The OSU team developed an adaptable template to report data by chemical class. The template incorporated the following principles: i) include iterative feedback from community liaisons and study participants; ii) set expectations regarding data type, use and limitations; iii) follow CDC Clear Communication Index guidelines; iv) use environmental health literacy taxonomy; v) place data in context within the study population; vi) provide resources and information for each chemical class and; vii) include strategies to reduce exposure. The process was challenged by the number of chemicals analyzed (1,530), uncommon chemical names, absence of health standards and the geographic distance between OSU (Corvallis, OR) and Houston, TX. The template was tested with the Houston pilot group and one community liaison, revealing that the template would benefit from diminished text, an 8th grade reading level, improved readability scores and increased contextual data. For example, participants wanted to see data from different areas of the United States. Positive feedback regarded the use of graphics on each page to explain the different chemical classes, use of chunking to break up text, graphic organizers and the use of a 'take home message' on the first page to summarize the results. Future work will consist of focus groups to further improve the template, as well as a confidential, automated system that will personalize, and provide the option to, email reports to study participants.

NIEHS R21ES029460

17 Evaluation of Report Back of Household-Level NO₂ and PM_{2.5} Concentrations to Community Participants in Exposure Assessment Study

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Focus: Evaluation

Abstract:

Communicating environmental exposure study results to communities via report-back programs are becoming increasingly incorporated into community-engagement efforts. Effective communication of exposure data may increase agency of the individuals by increasing environmental health literacy and actionability. As part of the Center for Research and Environmental and Social Stressors in Housing across the Life Course (CRESSH), home-specific exposure monitoring results for nitrogen dioxide (NO₂) and particulate matter (PM_{2.5}) were reported back to study participants. The report-back process included both a mailed report-back document and an in-person meeting at which participants could ask questions about the research process and their personal data. The report-back efforts were evaluated for both the clarity and accessibility of materials as well as the interpretation of the results by the participants. Components of the materials evaluation included reading level, informational structure, and numeracy demand of materials. The interpretation evaluation comprised of a comparison of intended communication of data as opposed to the interpretation by participants. We also evaluated who engaged in our report-back efforts, and whether they were representative of the sample population overall. Additionally, a qualitative evaluation of questions asked and participant engagement at the meeting helped to bolster understanding of level of participant engagement and comprehension. This evaluation process is useful to understand strengths and weaknesses of the report-back process, and the extent to which the presentation of results is being received in the way that the report-back developers intend. Implementing evaluation of report-back materials can help research teams better tailor their materials for future report-back efforts and ensure that the process is equitably accessible for multiple audiences.

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18 Use of a Science Cafe to Share and Discuss Climate and Health Research Findings

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Focus: Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

This poster will introduce the “Science Café” as a means to share research findings with community partners and other community stakeholders. A science cafe provides an opportunity for participants to discuss current science topics with experts in an informal setting. The loose structure of a few lightning talks, followed by a facilitated discussion period in small groups and then as a whole audience, allows for multiple topics and viewpoints to be addressed in a short period of time. We will use a science cafe focused on climate change that was convened in Detroit by the Michigan Lifestage Environmental Exposure and Disease (M-LEEaD) Center as an example. The poster will include: a description of what a science cafe is and the purpose of the featured event; a typical event format; sample speaker guidelines; and evaluation results and photos from the M-LEEaD event.

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19 Reaching Into the Community and Returning Genetic and Genomic Results: Immigrant Latino Adults from Mexico and Central America

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Focus: Biomonitoring/Individual Reporting, Community/Partner Level Reporting

Abstract:

Background: Sharing research findings about genetic and epigenetic effects of environmental exposures with Latino immigrant adults who have limited formal education is challenging. Information about mental models of trait inheritance held by these adults and their range of perceptions about genes and DNA may enable research teams to communicate findings more effectively. **Methods:** We conducted semi-structured in-depth interviews with 30 men and 30 women who were born in Mexico or Central American (MCA), had limited formal education, and were living in North Carolina. The interview guide was designed to elicit their beliefs and knowledge about trait transmission, genetics, genes, DNA, and environmental exposures. Of the 60 MCA adults interviewed, 27 had an elementary school education or less. **Results:** Five different models for mode of trait transmission emerged. All participants made a connection between traits and heredity from previous generations; a few perceived trait transmission is restricted to 4 or 5 generations. Few correctly identified the concept of gene; most were familiar with the association of genes and heredity. Most understood that offspring are a mix of parents' genes or blood, but were unaware of mechanism. A few loosely associated DNA and genes with trait transmission. However, in most models, DNA was mostly associated with blood or paternity testing, not heredity. Nearly all incorporated blood into their mental model. Blood in context of trait transmission may be metaphorical or literal. Nearly half of participants (in all models) referred to "strong blood" to explain dominance of physical traits across generations; among some, strong blood referred to personality. Knowledge about how trait transmission occurs varied substantially. **Discussion:** Strategies can be adopted to effectively communicate research findings about genetics or epigenetic effects of environmental exposures. Minimize the use of the word "blood" and be mindful of its possible interpretation. If it is necessary to discuss or visualize blood in the context of the study, be explicit about assumptions that MCA community members may have to avoid miscommunication. Provide a simple description of each term that does not assume any prior knowledge. Have visual images and hands-on manipulatives if possible. Understand that knowledge gaps may be filled with diverse cultural explanations that are not shared across the MCA adult immigrant community.

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20 Reporting Well Water Results in the New Hampshire Birth Cohort Study

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Focus: Biomonitoring/Individual Reporting, Specific Report Back Process or Product

Abstract:

The New Hampshire Birth Cohort Study is an ongoing pregnancy cohort study of mothers and children that was established in 2009. One of the original aims of the study was to test the hypothesis that prenatal exposure to arsenic is associated with birth outcomes (e.g. birth weight, fetal growth restriction and gestational age) in the New Hampshire population. In New Hampshire 50% of the population relies on private, unregulated well water sources. These water sources have been found to contain inorganic arsenic (iAs) primarily in bedrock wells. To be eligible for the study, women must reside in a household with a private water system, be between the ages of 18-45, pregnant, English speaking and having a singleton birth. At 24-28 weeks gestation we analyze a water sample collected from the home residence of enrolled women. The water sample is tested for arsenic using inductively coupled plasma mass spectrometry (ICP-MS) Participants are informed of the amount of arsenic in their tap water. The Maximum Contaminant Level (MCL) of 10 ug/L established by the US Environmental Protection Agency (EPA) for public water supplies is used to inform participants if their water levels of arsenic fall below or above the MCL. These results are provided to participants by mail along with the New Hampshire Department of Environmental Health Services' Arsenic Fact Sheet and information for further well water testing. During pregnancy (baseline) and every four months during the postpartum year, participants are asked the extent of tap water use for drinking cooking and mixing infant formula. We conducted an analysis of participant responses at baseline and compared their responses to these questions at the one year follow-up to determine if receiving results indicating high levels of iAs had an effect on the participant's subsequent use of tap water from private well sources. We found that after adjusting for frequency of tap water use at baseline, women with a high level of iAs (exceeding 10 ug/L) in their tap water were less likely to continue using tap water for drinking, cooking and mixing infant formula at one year. Our results suggest that providing well water results during pregnancy may reduce subsequent maternal use of iAs contaminated tap water for drinking, cooking and mixing infant formula.

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21 Individual and Community Report-Back Of Private Well Water Contamination: Effectiveness Of Communications Materials.

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Focus: Biomonitoring/Individual Reporting, Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

In NC, where 33% of the population gets its drinking water from private wells, a subset of private wells have been shown to have concentrations of arsenic and other contaminants exceeding Safe Drinking Water Act standards. No ongoing monitoring is required for private wells in North Carolina, leaving private well owners responsible for testing wells and addressing any contamination they find. In 2014, residents of several communities were impacted by a large coal ash spill, which released over 50,000 tons of ash, including toxic metals, in the Dan River. Many of these residents were directed by state agencies not to consume their well water. Subsequently, these residents, members of a statewide coalition of impacted communities, reached out to the University of North Carolina at Chapel Hill (UNC) Institute for the Environment and the UNC Superfund Research Program, for help in determining the potential for private well contamination in their areas, along with associated health implications. In response, UNC partnered with these communities to collect water and soil samples, and share results with community members. As part of this effort, we aimed to assess the effectiveness of report-back communications detailing the presence or absence of toxic metals in drinking water from private wells, as well as understand whether such communications were associated with health-protective actions taken by study participants. Participants (n=39) completed a pre-survey about their well water perceptions and a demographic survey. All received printed report back materials explaining the extent to which toxic metals were present in their well water in graphic- and text-based formats. Many attended a community presentation anonymously sharing individual results in the context of the community. Following testing of their well and communication by the project team about the results, fifteen of the thirty-nine participants responded to a follow-up survey, either online or through the mail. We will share results of this follow-up survey, including comparison of graphics-based vs. text-based results, and ability of participants to take appropriate health-protective actions. Having an established health-based standard for comparison appeared to influence participants' understanding of their results. Results suggest that report-back products

using a graphically-based format may better communicate results and thus allow residents drinking private well water to respond with appropriate action steps.

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22 Report Back of NO₂ and PM_{2.5} Concentrations From a Community Based In-Home Exposure Monitoring Study

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Focus: Biomonitoring/Individual Reporting, Community/Partner Level Reporting, Specific Report Back Process or Product

Abstract:

Exposure studies have been increasingly including report back of results to participants. This information can be used to decrease exposures, increase public understanding of science, and improve health. As part of the Center for Research on Environmental and Social Stressors in Housing across the Life Course (CRESSH), we reported back nitrogen dioxide (NO₂) and particulate matter (PM_{2.5}) results to participants of a home-based exposure monitoring study that took place over the course of a week in both a warm and cool season. Participants represented a diversity of racial/ethnic, socioeconomic, educational, and English language proficiency backgrounds. They also came from a diversity of housing situations (e.g., owner/tenant, single/multi-family, public affordable/private). The report back process was developed in collaboration with GreenRoots, a community-based environmental justice organization, and Health Resources in Action, a national non-profit public health organization. The process included individualized reports and a community meeting, which established a space for participants to learn about general study results, ask questions, and discuss their interpretations. Results were presented using graphs reflecting daily averages of individual results for NO₂ and PM_{2.5}, outdoor results of NO₂ and PM_{2.5}, study-wide results for NO₂ and PM_{2.5}, and ambient regulatory levels for comparative purposes. Because indoor air pollution is not regulated, World Health Organization (WHO) indoor air quality guidelines and results from other urban indoor air quality studies were presented to help participants interpret the results from their homes. We also provided participants with information on the pollutants, strategies to reduce exposures, and current projects to improve air quality in the community. A mixed-methods evaluation protocol was developed and implemented in order to assess if the report back materials were understandable, if they were useful, and if they motivated participants to take actions to reduce their exposure. Overall, this process was developed with a particular focus on the use of community-informed communication strategies, clear data visualization methods, and improving scientific literacy. We think that this strategy can be useful for other researchers who plan to report back results in future community-based exposure studies.

NIH-NIMHD 1P50MD010428-04

23 Durbars and Social Incentives as Facilitators of Successful Community Entry and Study Participant Retention: Lessons Learnt from Conducting an Environmental & Human Health Assessment Study in Agbogbloshie

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Focus: Community/Partner Level Reporting

Abstract:

Background: E-waste recycling activities at Agbogbloshie is highly informal, yet segregated into specific job descriptions; collection, sorting, dismantling and open air burning of cables of all sizes to retrieve copper wires. Activities at the site is carried out by mostly young men, who are from the Northern part of Ghana, and are mostly Muslims. The use of effective community engagement techniques or programmes are requisites to any successful and positive engagement with the community. Understanding the hierarchy within the community is the first step leading to a successful engagement. Programmes such as durbars and use of social incentives such as provision of free National Health Insurance Cards to community members are some of the ways one could gain unfettered access to this community.

Objectives: The aim of this study was to use durbars and provision of social incentives as tools for recruitment and retention of e-waste workers for an occupational human exposure assessment study at Agbogbloshie.

Methods: Durbars involving chiefs, religious & opinion leaders, political activists and study participants and provision of social incentives such as provision of free National Health Insurance Cards that guarantee free medical care for common illnesses were used to successfully announce the project, recruit and retain participants for the West Africa-Michigan CHARTER II for GEOHealth-Ghana (U01)

Results: E-waste workers were successfully recruited and retained for a well-defined longitudinal environmental & human health assessment study, the West Africa-Michigan CHARTER II for GEOHealth-Ghana (U01)

Conclusion: Our Community entry and engagement model could be adopted for recruitment and retention of study participants in other sector of the informal sector.

24 Translating Near Highway Research Into Action in Somerville, MA

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Focus: Translational Research Framework

Abstract:

Near-roadway air pollution is a public health problem that needs to move from observational studies to addressing the problem. Community Assessment of Freeway Exposure and Health (CAFEH) is a series of Community Based Participatory Research (CBPR) projects that began in 2008. CAFEH has carried out research on how traffic related air pollution affects cardiac health in neighborhoods in and near Boston. Currently, the CAFEH team is completing a community-level intervention in Somerville, Massachusetts. In the 1970s, a thriving neighborhood and business district in East Somerville was demolished for the construction of Interstate 93 (I-93); residents were uprooted and the local economy destroyed. Today, the Somerville stretch of I-93 carries over 200,000 vehicles per day through dense environmental justice (EJ) neighborhoods. CAFEH has documented that this traffic causes high levels of near-highway air pollution and residents in close proximity to the highway reported suffering from excessive noise pollution. In response to this, participants proposed an analysis of noise barrier installation along I-93. Accordingly, the project team investigated the potential and likely health impacts of noise barrier installation through a Health Lens Analysis (HLA), a tool that assesses the health implications of a project or policy. We used HLA to increase awareness of the effects of near-roadway air pollution exposure and ensure that construction of noise barriers on I-93 would not inadvertently damage health quality or reinforce inequalities. Central to this effort was robust community engagement. The project team held 5 multi-lingual community meetings, discussions with elected officials and community leaders, tabled at community events, and facilitated conversations with 2 English as a second language Classes. There have also been multiple meetings with Massachusetts Department of Transportation, which would need to be involved in sound wall design and installation. Noise was also determined to exceed health thresholds near I-93. Participants pushed back against unadorned noise barriers, leading the HLA to consider the impact of esthetics and the role of vegetation in design and exposure reduction. It was found that although barriers could reduce noise and air pollution exposure and have a positive effect on the community, geographic and meteorological conditions may limit barrier installation and efficacy in some areas along the highway. This research culminated in a community participatory design charrette where participants generated evidence-based and actionable design recommendations.

NIEHS ES026980

25 A Citizen Science Initiative on The Fairmount Greenway

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Focus: Community/Partner Level Reporting

Abstract:

Citizen-initiated, citizen-driven projects are usually the basis for citizen science activities. This project of the Fairmount Greenway Task Force (FGTF), a component of the Fairmount Indigo CDC (Community Development Corporation) Collaborative in the Boston area, is an example. As early as 2008 groups of citizens organized the Fairmount Coalition to bring transit equity to the densely populated cities and underserved populations south of Boston. The Fairmount Line, nine miles of light rail, was developed, and now runs from South Station in Boston to Readville. One of the equity aims of the rail line was to reduce vehicular traffic - cars and buses - in an attempt to reduce air pollution believed to be responsible for a significant portion of the high incidence of asthma in the neighborhoods south of Boston. A 2010 Boston Public Health Commission Report cited the asthma incidence as 18% in Dorchester compared to 11% in Boston. In 2015, the FTGT launched a project with the city of Boston to develop what they termed a “neighborway” - a series of neighborhood routes, that would enable children and adults to bike and walk to neighborhood destinations and to the rail line without either driving or using high-traffic roads. The “neighborway” was considered an intervention to reduce the high incidence of obesity which according to the 2010 Boston Public Health Commission (BPHC) report was 31% in Dorchester compared to 21% in Boston. This presentation will discuss the results of an FTGT-initiated citizen science activity to collect PM2.5 and noise data by bike along the Greenway and a parallel, high volume thoroughfare and describe on-going community engagement activities that grew out of the citizen science data collection. Analysis of these data shows significantly lower levels of PM2.5 and noise on the Greenway compared to the thoroughfare. Further analysis of the data shows that some areas of the Greenway are consistently associated with higher levels of air pollution exposure, the most robust example being where the Greenway intersects with Columbia Road. This work has policy and infrastructure implications: The Community Engagement Core is collaborating with Livable Streets Boston, a local 501(c)(3) non-profit, to support the efforts of the Dorchester Community to develop a redesign plan for Columbia Road. This stretch of roadway has been allocated a substantial budget for redesign through the Imagine Boston 2030 Initiative, with the aim of supporting a healthy and thriving Boston.

NIEHS P30-ES000002

26 Using Research on Near Roadway Ultrafine Particles to Influence Policy and Practice in Boston, MA

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Focus: Community/Partner Level Reporting, Translational Research Framework

Abstract:

Introduction: Community Assessment of Freeway Exposure and Health (CAFEH) is a series of community-based participatory research and translational projects in the Boston, Massachusetts area. CAFEH has progressed from conducting air pollution exposure and epidemiology research to translating our findings and the broader literature into policy and practice at the neighborhood, municipal, metropolitan area and state level.

Methods: To assess the impact of CAFEH, we conducted key informant interviews with people to whom we provided technical assistance (n=13). We asked about 1) their connection to CAFEH, 2) the ways in which CAFEH influenced their decision making, 3) the feasibility and acceptability of integrating protective measures against traffic pollution and 4) how they were using and disseminating knowledge they gained. Responses were recorded by note taking. Two researchers coded the responses thematically by question and met to reconcile codes after which content analysis was applied.

Results: Overall respondents had a favorable opinion of CAFEH. The most common impacts described were related to construction practices and the type of filtration used. Developers reported shifting building practices to use filtration above the industry standard. Policy makers described developing legislative proposals designed to reduce traffic-related exposures and attributed them directly to their work with CAFEH. Municipal planners said that working with CAFEH changed that way they think about community design so that they thought more about the health impacts of urban planning decisions. Overall, participants reported that what they learned continued to influence their decision-making for up to several years. It was also reported that engagement with CAFEH strengthened connections to the university.

Conclusion: The CAFEH approach to Community-Based Participatory Research has had modest, but real impact by actively translating our research and knowledge into policy and practice. Future efforts should attempt to expand the reach of these impacts.

27 Conduct of Scientific and Clinical Research in the Informal Sector: Keeping Community Members at Research Sites Engaged/Interested in Research Activities

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Focus: Community/Partner Level Reporting

Abstract:

Conducting conventional scientific and clinical studies in the informal sector is often more challenging compared to doing so in the formal sector due to the fact that informal sector is less organized and unregulated. As a consequence, the populations in the informal sector are unstable and transient, making the conduct of observational studies that require follow-up on subjects often incredibly even more daunting. The U01 research studies at Agbogbloshie form a component of the West Africa-Michigan Charter II for GEOHealth project which seeks to: 1) characterize work-related, time-varying, job-specific exposures of electronic waste recycling activities at the Agbogbloshie site, and assess biological markers of dose, to metals, organic compounds, and markers of combustion products; 2) provide estimates of potentially increased lifetime, work-exposure-associated cancer risks; and, 3) evaluate associations of exposures with measures of acute and chronic respiratory morbidity in workers. In this poster, we report the combination of strategies employed to keep the community members interested in the on-going studies conducted in an informal sector.

US NIH/Fogarty International Center & Canada's International Development Research Center 5U2RTW010110

28 Effects of Urban Ultrafine Particles and Black Carbon on Blood Pressure

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Focus: Translational Research Framework

Abstract:

Living close to major roadways is associated with elevated blood pressure. It has been hypothesized that exposure to traffic-related air pollution (TRAP) may be a risk factor; however, the components of TRAP most closely related to elevated blood pressure have not been clearly elucidated. Our study assessed (a) the effect of ultrafine particles (UFP) and black carbon (BC) - both are markers of traffic emissions - on blood pressure (BP) during short duration exposures, and (b) the efficacy of use of high efficiency particulate arrestance (HEPA) filtration as an intervention. We used a crossover trial design to randomly and blindly assign 77 participants (aged 40-75, no diagnosis of hypertension) to three different two-hour exposure sessions. Sessions were conducted in a near-highway setting (community room in a public housing building located near the intersection of highways I-90 and I-93 in downtown Boston, Massachusetts) where three different levels of exposure, i.e., high, medium and low, were attained by varying the degree of ventilation and use of HEPA filtration in the room. During high exposure sessions, the room was ventilated with outdoor air and no filtration was used. During low exposure sessions, leakage of outdoor air into the room was minimized and HEPA filtration was turned on in the room. Indoor particle number, BC, and fine particulate matter concentrations were continuously monitored. During each session participants sat quietly and wore noise-cancelling headphones, and BP was monitored every ten minutes (using an ambulatory BP monitor) and pulse and oxygen saturation were monitored continuously. Overall, we were able to attain a ten-fold contrast in UFP concentrations between high and low sessions; median concentrations were 27000 vs 2500 particles/cm³. The contrast in BC concentrations was approximately five-fold (700 vs 120 ng/m³). We used a linear mixed model, consisting of a random intercept and effects for ventilation, period, and sequence to analyze mean changes in systolic BP. HEPA filtration was significantly effective in minimizing changes in BP: the overall mean change in systolic BP over the course of the sessions was 0.7 mmHg during low exposure, 1.0 mmHg during medium exposure, and 2.4 mmHg during high exposure (sessions (linear trend p-value = 0.038). Our results show that under controlled conditions, HEPA filtration can significantly reduce blood pressure effects of traffic-related air pollution.

NIEHS R01ES026980

29 Locating the Community in “Community Engagement”

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Focus: Evaluation

Abstract:

Community engagement in environmental health science research, a process by which academics and communities collaborate to develop and apply knowledge to address societal needs, has been recognized for its capacity to empower residents and build bridges between universities and disadvantaged populations and places. However, “community” is a vague and value-laden term that may be deployed differently in a range of contexts. Establishing and meeting objectives for community engagement therefore necessitates answering more fundamental questions: who and what is the community with whom the university seeks to engage, and what are effective means to accomplish this end? This case study investigated the ways in which the Community Engagement Core (CEC) of the University of California (UC), Davis Environmental Health Sciences Core (P30) Center has operationalized community engagement. The research provides an in-depth case study of the UC Davis CEC, drawing from the investigator’s 2,000 hours of participant observations; the CEC’s historical documents; semi-structured interviews with researchers, members of the Community Stakeholder’s Advisory Committee and CEC leadership; and focus groups with a mix of individuals from all three groups. The study revealed that the UC Davis CEC operationalizes community engagement in two ways: connecting researchers with grassroots-driven advocacy efforts, and convening researchers and leaders from advocacy and government sectors to form action-oriented research collaboratives. The former prioritizes engagement with and leadership by the people most affected by an issue of interest, while the latter, which Christens & Inzeo (2015) term “grassroots organizing,” convenes established leaders to pursue system-level action. An important distinction can be made between these two approaches: while a grassroots approach involves the people directly affected by an issue, the grassroots approach typically relies on leaders of intermediary organizations to represent the needs and desires of the community. Findings suggest each approach has its strengths and weaknesses and that researchers and practitioners should be careful to develop an engagement approach that is intentional about how the community is defined and represented. The former can address immediate local needs but can struggle to promote structural change while the latter can address broader systems yet risk marginalizing local voices. This suggests the benefit of hybrid approaches.

NIEHS P30ES023513

30 Asthma and Obesity: Approaches to Care

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Focus: Community/Partner Level Reporting

Abstract:

Individuals with asthma and obesity are more likely to have severe asthma that is less well controlled, and less responsive to medication than lean individuals with asthma. This is important to address because this co-morbid presentation is associated with higher medical costs, a decreased quality of life, and a higher risk of death. Research suggests that, in addition to treating asthma with medications, focusing on lifestyle factors—such as nutrition and exercise, could help this group gain better control of their asthma and increase their quality of life. Furthermore, weight-loss of 5-10% could also significantly improve asthma control. A final consideration is to address additional co-morbidities in these patients, which include obstructive sleep apnea, increased susceptibility to infection, and depression. One of the priorities of the Harvard Chan-NIEHS Center Community Engagement Core is to address high rates of asthma and obesity in the Dorchester Community of Boston. We have partnered with the Boston Public Health Commission (BPHC), The Boston Asthma Home Visiting Collaborative, researchers who study the connection between asthma and obesity, and professionals who treat asthma and obesity. On May 2nd 2018, these partners came together for a Workshop entitled Asthma and Obesity: Approaches to Care, which focused on scientific findings in relation to asthma and obesity and included brainstorming sessions with experts and healthcare providers aimed at generating ideas for improving care for patients with asthma and obesity. The outcomes of the workshop include the Asthma and Obesity: Approaches to Care Workshop Summary, an in-depth review of the workshop and best practice recommendations. Additionally, the Community Engagement Core has worked with BPHC and the Boston Asthma Home Visiting Collaborative to create two documents on Asthma, Obesity, and Lifestyle Factors: the first for healthcare providers and a second for patients with asthma and obesity. The documents are easy to read for the targeted audiences and provide the most relevant and useful information regarding improving asthma control and quality of life through lifestyle factor modification. Going forward, the Community Engagement Core intends to share the documents broadly with healthcare providers, patients with asthma and obesity, and PEPH to benefit a wider audience

NIEHS P30-ES000002

31 Gigigoo'inaan App: Technology to Improve Environmental Health Literacy in Laurentian, Great Lakes Native Americans

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Focus: Tools or Technology

Abstract:

The presence of persistent bioaccumulative toxics (PBT) in aquatic food chains complicates decision processes of people with a strong culture of fish consumption. This environmental contamination is especially problematic for Native American populations in the Laurentian Great Lakes region (Anishinaabeg). Pursuing the growing discipline of environmental health literacy (EHL) may help reduce toxic exposures, support healthy decision-making, and combat health deficits. Our goals for this research were 1st to improve environmental health literacy using novel technologies and 2nd to help define environmental health literacy metrics that can be tracked over time, especially regarding culturally-contextualized health interests. We recently reported that a mobile app (Gigiigoo'inaan App) presenting personalized, culturally-contextualized fish consumption advice may improve EHL for the Anishinaabeg. We conducted a pre-test post-test evaluation with 103 Anishinaabe adults. Participants estimated their current fish meal consumption over a hypothetical month before exposure to the software and then planned their future consumption of fish meals in a month after using the mobile app. Significantly more fish meals (6.59 vs 5.41 $p=0.001$) and meals of species considered "traditional" to Anishinaabeg on average (6.4 vs 5.4, $p=0.014$) as well as total traditional fish grams (1011.51g vs 814.77g, $p=0.034$) were selected post relative to pretest. These increases were accompanied by widespread (97%) adherence to conventional advice that minimizes PBT exposure health effects (Agency for Toxic Substances and Disease Registry minimum risk levels). Gigiigoo'inaan App safely supports desired fish consumption rates. We propose these constructs of EHL for guiding future research: Adaptation, Translation, and Resonance (ART).

NIEHS 1R21ES025788-01

32 Faculty Training in Science Communication to Translate Environmental Health Research to Appalachian Communities

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Focus: Tools or Technology, Translational Research Framework

Abstract:

The purpose is to: 1) describe the University of Kentucky Center for Appalachian Research in Environmental Sciences (UK-CARES) Fellows in Science Communications Program as a novel tool to promote environmental health science (EHS) translation to different audiences; 2) explore the outputs from the partnerships that formed within the Fellows cohort and across academic and community sectors; and 3) explore preliminary outcomes from the program. The UK-CARES Fellows in Science Communication program supports faculty members at UK and other Kentucky colleges and universities serving Appalachia in translating EHS with different audiences and in effectively communicating scientific ideas. The program provides faculty with skills training for communicating science to those outside their field, the media, policymakers, and to the lay public through a variety of media including oral presentations, social media, and informal means, leading to an enhanced capability for outreach and success in research, teaching, and service. Faculty were nominated by their institutions, community members, or self-nominated. The first cohort of Fellows (2018-19) includes 10 researchers representing six colleges at UK, and educators from the University of Pikeville and Perry County Central High School. The Fellows participate in a year-long training, beginning with six skill-building exercises focused on specific aspects of the communication process, individual coaching sessions providing real-time tailored feedback, and an intense introductory training in science communication provided by COMPASS. Training occurs both in-person and via webinar. The program is evaluated through video-recorded talks given by each participant at the beginning and end of the program, short-answer surveys following each training session, and quarterly online surveys measuring self-efficacy with those of the same discipline, those from other disciplines, and lay audiences. Scholarly productivity and recognition related to their new skills is tracked quarterly. The UK-CARES Fellows in Science Communication program provides a value-added resource to faculty in academic and community settings to assist in them in translating their research with different audiences. The program also offers the Fellows the opportunity to network and collaborate with UK-CARES faculty and community stakeholders from the Appalachian region. We will present preliminary outputs and outcomes from the program.

NIH/NIEHS 5P30ES026529-02

33 Tools to Advance Environmental Health Literacy through Interactive, Hands-on Science Kits for Use with Community Audiences

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Focus: Tools or Technology

Abstract:

During the past year, four University-based Community Engagement Cores were funded by the National Institute of Environmental Health Sciences (NIEHS) to develop eight interactive environmental health science kits for use with community audiences. The purpose of these kits is to provide an easy to use, hands-on resource for diverse community audiences to build environmental health literacy. These Community Environmental Health (CEH) education kits cover a range of topics, including lead poisoning prevention, drinking water quality from private well and municipal sources, healthy homes, skin cancer and UV radiation exposure, and pesticide use in the home. The kits also encourage discussions about ways to reduce exposures to environmental health hazards. The development of these CEH kits included integrating input from community engagement experts and community-based stakeholders. CEH kits are ready-to-go bags that contain all of the materials needed for the hands-on activities. The kits require no special preparation on behalf of a facilitator. They are graphically rich, story-based, involve limited reading, and integrate hands-on activities in a setting that takes approximately 20 minutes. This poster will discuss the process of developing these kits, including gaining and integrating stakeholder feedback. Possible applications of these kits will be presented, including how they potentially can be utilized to enhance community members' interpretation of environmental health research results. We will also present challenges to developing these kits, as well as best practices that were identified during this process for utilizing these kits in various community-based environmental health education and research efforts.

NIEHS 5R42ES023706-03

34 FRESH: Personalized Environmental Report Back to Prevent Lung Cancer

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Focus: Specific Report Back Process or Product

Abstract:

Environmental exposure to tobacco smoke and radon cause lung cancer. This RCT assigned 515 homeowners, stratified by smokers in the home, to treatment (Tx) and control groups. Tx received free radon and air nicotine (AN) test kits in primary care, along with verbal, written and YouTube video instructions for deploying the kits. We used a 20-25 minute problem-solving phone consultation with the Tx group to report back results of the home tests, using a standardized report-back protocol to assess stage of readiness to change and provide tailored queries and messages based on the readiness stage to discuss remediation (smoke-free home or mitigation for radon). Those with high radon received a voucher for up to \$600 toward mitigation costs. Controls received a coupon to request free test kits at a later date. Both groups were asked to retest their homes at end of study. We tested for differences in stages of action (SOA) to test and remediate (mitigate or adopt a smoke-free home policy) by study group over time. Tx homeowners were nearly ten times more likely to test for radon and AN at baseline, compared with controls ($p < .001$). There was a significant difference in SOA to test for radon and AN over time between Tx and Controls (significant interaction effect; $F = 22.9$; $p < .001$ and $F = 63.0$; $p < .001$, respectively). SOA to remediate also demonstrated significant group differences between Tx and Controls over time (significant interaction; $F = 34.0$, $p < .001$ and $F = 2.7$, $p = .048$ for radon and AN, respectively). Of Tx homeowners with high radon at baseline ($n=60$), 10 mitigated for radon (17%); 8 of the 10 redeemed the voucher. Homeowners are receptive to home testing for radon and air nicotine, especially when there is easy access to test kits and personalized report-back. Nearly all homeowners with high radon who decided to mitigate used a voucher to help with the cost. When homeowners were provided free radon and AN test kits in primary care, pharmacies, or community settings and engaged in telephone-based report-back, they were more ready to take action to test their homes and remediate for radon and air nicotine. FRESH (Freedom from Radon Exposure and Smoking in the Home) is a promising personalized report-back intervention designed to reduce environmentally-induced diseases. Environmental public health professionals are in a unique position to educate the public about the importance of home testing, promote access to home test kits, and foster remediation.

NIH/NIEHS and NIGMS R01ES021502

35 The Continued Development of Investigating Environmental Health Literacy

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Focus: Tools or Technology, Other

Abstract:

For 6 years The Southwest Environmental Health Sciences Center at The University of Arizona (SWEHSC) has been studying environmental health literacy (EHL). The need for this area of study stems from low literacy and education levels in the community. Only 25.6% of adults aged 25 and older in Arizona have greater than a high school diploma, while 38% of adults in Tucson have basic or below basic literacy levels. SWEHSC's work in EHL began with a National Institutes of Environmental Health (NIEHS) Inter Center Pilot Project in collaboration with the University of Rochester Environmental Health Center called "Defining Environmental health Literacy" (DEHL). This project used grounded theory investigation to produce a consensus definition of EHL. DEHL performed 26 in depth interviews of a cross section of professionals and community members with an interest in environmental health (EH), and surveyed over 250 clinicians, EH researchers, educators, and users of EH information. Ultimately, this project was able to identify the knowledge and skills that a person would need in order to have good EHL. The completion of DEHL resulted in a collaborative project between SWEHSC and Tucson Water called "Water Talks". The goal of this ongoing project is to develop a risk communication model that will improve the way Tucson Water communicates with the public about water quality and safety. To date, Water Talks has completed 8 focus groups to document participants' thoughts, feelings and perceptions of the safety and quality of their tap water. The next step of the Water Talks project is to widely distribute a survey to Tucson Water customers that will provide generalizable data. Ultimately this information will be used to inform an interactive multimedia risk communication model. Most recently SWEHSC was awarded an NIEHS administrative supplement in collaboration with the University of North Carolina Center for Environmental Health and Susceptibility. This project, called "Measuring Environmental Health Literacy", will define the knowledge and skills that constitute EHL in the context of toxic metals contamination of private wells, develop and pilot test an instrument that will assess relative levels of EHL, and disseminate EH materials through the Environmental Health Sciences Core Centers, Partnerships for Environmental Public Health, and other scientific, public health, utility, and science education networks.

NIEHS P30 ES006694

36 Building Youth Capacity to Improve Environmental Health in Rural Kentucky: Mountain Air Photovoice Project

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Focus: Community/Partner Level Reporting

Abstract:

The most recent strategic plan for the National Institute of Environmental Health Sciences (NIEHS) encourages academic-community partnerships to enhance our understanding of potentially missing information about environmental determinants of health inequities. Community-based participatory research (CBPR) offers a framework for such partnerships and has become increasingly popular over the last 15 years, particularly as an approach to address health inequities in marginalized populations. However, very few CBPR projects have included youth as leaders in the research process, and, to date, no such studies focused on environmental health have occurred in Appalachia. In order to expand understanding of the potential environmental determinants of respiratory illness in Eastern Kentucky, the Mountain Air Project (MAP) began in 2015, with funding from NIEHS (R01ES024771-01; MPI: Browning and Schoenberg). As part of MAP, investigators undertook a CBPR project called photovoice to establish rapport and appreciate the lived experiences of youth living in Letcher County. Photovoice is a method in which participants (youth, in this case) are asked to represent their perspectives through photographs and explanatory narrative. The approach can serve as a needs assessment and can empower participants to build capacity for action. The goal of MAP's photovoice is to improve our understanding of how youth living in rural, resource-poor Appalachian Kentucky perceive the influence of factors inside and immediately outside the home on respiratory health. In this presentation, we share initial findings from the MAP photovoice project.

NIEHS R01ES024771

37 Evaluating ATHENA: Measuring Outputs and Impacts From Collaborative Curriculum Development

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Focus: Evaluation

Abstract:

Since 2010, the University of Washington (UW) Interdisciplinary Center for Exposures, Diseases, Genomics, and Environment (EDGE) has engaged communities across Washington State with key concepts from environmental and public health through its Academy for Teaching About Health and Environmental Associations (ATHENA). During summer ATHENA workshops, EDGE staff and scientists collaborate with health teachers to develop interactive classroom exercises that teach key environmental and public health concepts. Because all Washington high school students are required to take Health, activities developed for these classes have wide reach, particularly when they are officially adopted into the District Curriculum, as was the case in the Bellevue School District. Because ATHENA's classroom activities are engaging and interactive, students often bring the concepts home to share with their families. This results in wide reach for ATHENA, which is undeniably a goal and a win, but also a challenge in terms of evaluation. How best can we evaluate outputs and impacts when direct communications with students are necessarily limited? In the summer of 2018, EDGE hosted a different kind of ATHENA workshop, one that focused on evaluation rather than curriculum development and concluded with a set of steps for evaluation. Our poster will present the results from this workshop along with the logic model that organized our effort. We seek dialogue with other community engagement programs with diverse and diffuse outcomes facing similar evaluation challenges.

NIEHS P30ES007033

38 Amplifying Children's Environmental Health Research: Development and Implementation of a Pilot Social Media Content Toolkit and Campaign

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Focus: Other

Abstract:

The Children's Environmental Health Research Centers (Centers) and Pediatric Environmental Health Specialty Units (PEHSUs) focus on the interaction of environmental influences on children's health. A hallmark feature of Centers and PEHSUs is their focus on outreach and research translation to the public. Social media is increasingly common outreach tool in public health. According to the Pew Research Center's Social Media Use report, 79% of all United States adults accessing the internet use Facebook (68% of all adults), with 76% of these users accessing the site daily. The Centers/PEHSU Social Media Workgroup was formed in October 2017 to create network capacity for utilizing social media as an outreach tool, to increase engagement between members across the network, to increase reach and engagement of collective social media efforts. A pilot social media content toolkit was developed, including quality control mechanisms to assure content was properly vetted and had utilized research translation best practices. This content toolkit was piloted through an outreach campaign focused on the NIEHS/EPA Children's Environmental Health Centers Prevention Research Impact Report. Feedback on the pilot outreach campaign was collected by surveying Center/PEHSU staff on current and planned social media use and the acceptability and effectiveness of the pilot toolkit and accompanying trainings. This pilot work informed the development of improved content, trainings, and workshops. Lessons learned and opportunities for replication of the content creation and dissemination processes developed by the Social Media Workgroup will be shared.

NIEHS and EPA

NIEHS P50ES026071 and EPA 83615301

39 Participatory Evaluation of Community Health Worker Programs: Insights From the Gulf Region

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Focus: Evaluation

Abstract:

As community health workers (CHWs) are increasingly incorporated into environmental health interventions and research, it is critical to evaluate CHW programs to maximize intended impacts. However, there is no consensus regarding the best way to evaluate CHW programs and existing frameworks often lack input from CHWs and CHW managers. In this poster, we describe the participatory development of an evaluation framework for CHW programs, explain the framework itself, and characterize some key opportunities and challenges for CHW program evaluation in research and clinical settings. Semi-structured interviews (n=42) and surveys (n=18) were conducted with CHWs and CHW supervisors associated with a CHW Placement Program managed by Tulane University as part of the Gulf Region Health Outreach Program. Data collection occurred in federally qualified health clinics and community-based organizations across four Gulf states. Respondents directly informed the development of an evaluation framework for CHW programs, identifying seven evaluation categories: client relations, intra-organizational relations, inter-organizational relations, capacity development, program effectiveness, cost efficiency, and sustainability. While these evaluation categories can be applied to CHW programs in diverse settings, respondents recommended tailoring indicators to program context. By examining practitioners' perspectives on the evaluation of CHW programs in the Gulf region, this presentation contributes to an evidence base for implementing and evaluating CHW programs in a variety of fields, including environmental health.

40 Association Between Neighborhood Socioeconomic Status, Tobacco Store Density and Smoking Status in Pregnant Women in an Urban Area

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Focus: Community/Partner Level Reporting

Abstract:

Background: High density of tobacco stores and socioeconomic factors have been shown to influence tobacco cigarette consumption. Smoking during pregnancy can lead to serious health consequences, including preterm delivery and low birth weight. Given such health risks, an understanding of factors that influence maternal smoking behaviors during pregnancy is critical.

Objective: To assess the relationship between neighborhood socioeconomic status and tobacco store density with neighborhood rates of maternal smoking during pregnancy in a large, urban area.

Methods: Data for 55 community areas in Baltimore City available from the Baltimore City Health Department (BCHD) were summarized. Women who smoked while pregnant between 2010-2014 were reported to the BCHD from the Maryland Department of Health and Mental Hygiene. Associations between smoking while pregnant and tobacco store density in a community were determined using Moran's I and spatial regression analyses to account for autocorrelation. The fully adjusted model took into account the following community-level socioeconomic variables as covariates: neighborhood median income, percentage of those living in poverty, percentage of uninsured, and percentage of persons with at least a college degree.

Results: The percentage of women in Baltimore City who identified as actively smoking while pregnant was 10.4% + 5.8%. The tobacco store density was 21.0 + 12.7 per 10,000 persons (range 0.0 - 49.1 tobacco store density per 10,000 persons). Median annual neighborhood income was \$44,658 + 20,523 and percentage of persons with a college degree was 28.4% + 21.6%. In the unadjusted analysis, higher tobacco store density was associated with higher prevalence of smoking while pregnant (Figure). In the adjusted model, an increase in density of 1 tobacco store per 10,000 persons was associated with a 1% increase in women who reported

smoking during pregnancy $\beta = 1.0$, $p = 0.04$), while having a college degree was protective ($\beta = -124.3$, $p < 0.001$). Income, poverty and uninsured status were not statistically significant.

Conclusion: In Baltimore City, neighborhood socioeconomic factors and tobacco store density were associated with prevalence of maternal smoking while pregnant. These findings support the need to further assess and develop interventions to reduce the impact of tobacco store density on smoking behaviors and health risks in communities.

41 Application of Mosquito Repellent Coils and Associated Self-Reported Health Issues in Ghana

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Focus: Other

Abstract:

The use of mosquito coils has gained widespread patronage in malaria endemic countries, even though it is not a recommended preventive measure for avoiding the mosquito. Mosquito coils contain insecticides, which are expected to vaporize slowly once the coil is lit, to provide a protection against the mosquito. The mosquito coil base material contains a variety of compounds capable of burning slowly to gradually release the insecticide. The mosquito coil smoke, however, is potentially a source of indoor air pollution with implications for acute respiratory infections (ARI) and other illnesses. The present study investigated the application of mosquito coils and associated self-reported health issues in Ghana. A cross-sectional study was undertaken in which questionnaires were randomly administered to 480 households across four districts in Ghana. Respondents who exclusively applied mosquito coils were grouped as test cohort, while those who did not apply any mosquito repellency method constituted a control cohort. The test group that applied mosquito coil reported malaria incidence rate of 86.3%. The control group that did not apply any mosquito repellency method rather reported a reduced incidence rate of malaria at 72.4%. Chi-square analysis suggested that the observed difference was statistically significant ($\chi^2 = 4.25$; $p = 0.04$). Respondents who reported symptoms of cough from mosquito coil application (52.6% incidence rate) were marginally greater than their counterparts who did not apply the coil (46.1% incidence rate). It was also found out that respondents with short breath, which was used as a proxy for ARI, were more likely to have applied mosquito coil. The application of mosquito coil did not necessarily reduce the incidence rate of malaria in the study communities. It however presented a potential respiratory risk factor, which should be further investigated by critically examining exposure to particulate matter emissions from burning coils.

42 Strategies for Engaging a Difficult to Reach Appalachian Population: the Mountain Air Project

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Focus: Community/Partner Level Reporting

Abstract:

Background: Effective strategies for engaging vulnerable populations in research are critical to addressing health disparities. We describe a community/academic partnership which used on-the-ground enumeration to achieve an 82.1% response rate in a cross-sectional study of adult respiratory disease in two counties in Appalachian Kentucky.

Methods: Community members identified a novel unit of sampling: 14-digit U.S. Geological Survey hydrologic units. On-the-ground enumeration was used to create an accurate sample frame. Community Health Workers administered a comprehensive survey and spirometry from randomly selected households in 40 Hydrologic Unit Codes (HUCs). A subset of participants also received in-home air quality monitoring.

Results: 28 of 40 HUCs had participation rates of 80% or greater (n = 972). In the subset of in-home air monitoring particulate matter (PM_{2.5}) greater than 22 µg/m³ was associated with abnormal spirometry.

Conclusions: Investigators seeking to recruit vulnerable rural populations, who often face health inequities as well as geographic and social barriers to participation, may consider on-the-ground enumeration. In rural populations in particular, successful navigation of challenges in research are enhanced through the guidance of community members.

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44 An Environmental Justice Analysis of Ultrafine Particle Exposure in the Greater Boston Area

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Focus: Community/Partner Level Reporting

Abstract:

Our team has developed a spatio-temporal model of ultrafine particle (UFP) concentrations based on mobile monitoring and fixed site data for the cities of Boston and Chelsea, Massachusetts. We have combined this model with demographic and socioeconomic data to investigate associations and highlight potential environmental justice concerns. We hypothesize that indicators of lower socioeconomic states (SES) will be associated with high UFP concentrations. Our analysis also aims to interpret and communicate the results in a meaningful way to local communities. Census block groups that laid within or whose border crossed a 1000-meter buffer of the original mobile monitoring route were considered in this analysis, totaling 250 block groups in Boston and 27 block groups in Chelsea. UFP concentration was estimated for every block group and we obtained data on male unemployment, median income, education, female heads of household, poverty level, minority population, public assistance and home ownership from the American Community Survey (ACS) for the year the mobile monitoring took place (2013 in Boston and 2015 in Chelsea). We used SAS 9.4 and ArcGIS to map data and conduct quantitative analyses. Preliminary analyses have shown small, but statistically significant, inverse correlations between UFP exposure and percent of households with female heads of household ($r=-0.17$, $p=0.02$), percent of households occupied by owners ($r=-0.229$, $p<0.01$), median income ($r=-0.154$, $p=0.02$), percent of the population that are minorities ($r=-0.133$, $p=0.03$), and percent of the population that is below poverty ($r=0.200$, $p<0.01$). Statistically significant correlations were not found for unemployed male population, lower education or households receiving public assistance. One explanation for weak correlations, many of which were opposite of the hypothesized directions, may be due to the fact that areas of high traffic in Boston are mainly downtown, where property values are higher. These high traffic areas are a major contributor to ambient UFP concentrations. Our preliminary findings do not suggest an association between low SES and ambient UFP concentrations in the areas studied. This result may be due to particular built environment conditions. Further analyses can shed light on additional covariates that commonly confound environmental justice analyses.

Trace Metals Analysis of Lignite Coal from Kosovo and Air Pollution-Related Health Risks

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Focus: Evaluation, Tools or Technology, Translational Research Framework, Other

Abstract:

More than 6600 coal-fired power plants serve an estimated five billion people globally and contribute 46% of annual CO₂ emissions. Gases and particulate matter from coal combustion are harmful to humans and often contain toxic trace metals. The decades-old Kosovo power stations, Europe's largest point source of air pollution, generate 98% of Kosovo's electricity and are due for replacement. Kosovo will rely on investment from external donors to replace these plants. Here, we examine non-CO₂ emissions and health impacts by using inductively coupled plasma mass spectrometry (ICP-MS) to analyze trace metal content in lignite coal from Obilic, Kosovo. We find significant trace metal content normalized per kWh of final electricity delivered: As (22.3 ± 1.7), Cr (44.1 ± 3.5), Hg (0.08 ± 0.010), and Ni (19.7 ± 1.7) mg/kWhe. These metals pose health hazards that persist even with improved grid efficiency, suggesting that the source of pollution must be mitigated. We then explore the air-pollution-related risk associated with several alternative energy development pathways through the use of the European Commission's External Costs of Energy (ExternE) modeling program. Our analysis estimates that Kosovo could avoid 2300 premature deaths by 2030 with investments in energy efficiency and solar photovoltaic energy backed up by natural gas. Energy policy stakeholders should perform a comprehensive risk assessment including an analysis of heavy metals and the composition of particulate matter to account for all associated health risks, as should multilateral development banks before guaranteeing loans on new electricity projects.



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