

# Partnerships for Environmental Public Health

DRAFT A New 10-Year Strategy: 2022-2032

Anticipated -- Presented to Council June 2022

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## Background

The Division of Extramural Research and Training (DERT) developed and launched the Partnerships for Environmental Public Health (PEPH) program in July 2008. DERT program staff presented the concept to the National Advisory Environmental Health Science Council (NAEHSC) in September 2008 with input from the extramural community.

Since its implementation, the PEPH program has become a recognized community of practice that brings together scientists, community members, educators, health-care providers, public-health officials, and policy makers with a shared commitment to advancing the impact of environmental public-health research at the local, regional, and national level. Additionally, PEPH is a valued source of information about environmental health issues. For more than 10 years, PEPH has promoted and championed **Environmental Public Health as the science of conducting and translating research into action to address environmental exposures and health risks of concern to the public.**

Staff members of DERT envisioned the PEPH program as an approach to:

- **Coordinate and integrate new and existing initiatives** involving communities and scientists collaborating on environmental public-health research;
- **Develop and evaluate strategies to communicate environmental public-health messages** to diverse audiences;
- **Create and distribute materials** to increase awareness and literacy about environmental-health risks; and
- **Evaluate the program's contributions** to advancing environmental public health.

### PEPH Tenets:

- Engage diverse communities.
- Promote the best science.
- Respond to current issues.
- Focus on prevention.
- Foster unified, integrated, and synergistic activities.
- Support research to improve theories, methods, and practice.
- Share value of scientific advances and translational efforts.
- Promote research into action.

DERT staff developed the PEPH framework with extensive involvement from its extramural community. The Division released a Request for Information in October 2007, compiled and analyzed the 120 responses, and organized a workshop in June 2008 based on the RFI results. DERT staff invited thought leaders from the fields of public health, environmental justice, community-based research, communication, and advocacy. Using information from both the RFI and the workshop, DERT program staff developed the outline of the PEPH 10-year coordinating program of grants to support research, communication, capacity building, and evaluation. For the first time, DERT had a structure to promote interactions among grantees from different grant programs with a common interest in environmental public health.

### The PEPH model: coordinated activities in research, communication, capacity building, and evaluation

The PEPH model categorizes activities into five primary areas — coordination, research, communication, capacity building, and evaluation — with interaction and crossover among them.

Evaluation is an all-encompassing component in the PEPH model. The PEPH Evaluation Metrics Manual<sup>12</sup> provides examples of tangible metrics that PEPH grantees and their community partners can use to plan, implement, and evaluate a program or project. Documenting achievements related to building community partnerships and translating research is critical for demonstrating the value of environmental public health.



## Accomplishments and Benefits

Examination and advancement of cross-cutting issues and topics has been the greatest benefit of the PEPH Network. Over the years, the PEPH Network created a shared space, which facilitated productive interactions, both virtual and face-to-face, among grantees across different grant programs and funding mechanisms. Through these collective efforts, the PEPH Network helped to identify, shape, and advance new areas and opportunities in environmental public health, as well as focus attention on issues and topics (such as environmental health disparities and environmental justice) that require continued attention. **Often these interactions sparked new directions.**

Three noteworthy accomplishments include:

### 1. Environmental Health Literacy (EHL)

NIEHS grant programs have been supporting the development of risk communication strategies, environmental health messages, and informational materials, but little had been done to examine their impact on EHL or to understand the elements of successful environmental health messages. In [2014](#), the PEPH Network convened an annual meeting on EHL to meet that identified gap and to build upon ongoing conversations around health literacy in the context of environmental health sciences. Since that meeting, NIEHS program staff published a commentary and observed an increase in the number of publications on the topic of “Environmental Health Literacy.” In fact, we see a notable increase from 2011 to 2019 in PubMed, which corresponds to the time in which NIEHS was engaging with the PEPH Network to advance this concept. Program staff also worked with grantees to author a book on environmental health literacy, which has been accessed nearly 9,500 times from the Springer website.

### 2. Tribal Ecological Knowledge

Through interactions at PEPH meetings, there has been an increased attention to tribal environmental health. Discussions at PEPH meetings among participants helped to inform an [important workshop on Traditional Ecological Knowledge](#) (2015). Program staff working with grantees and community partners identified and recognized the need to focus on TEK. An outcome of the workshop was the inclusion of language in the Research to Action funding opportunity announcement inviting research that explores or validates TEK as part of an environmental health sciences research application.

### 3. Citizen Science/Community-engaged Research

The PEPH focus on community engagement enabled NIEHS to respond promptly and thoughtfully to national conversations in 2014 around the use of Citizen Science by Federal programs. NIEHS became a resource for information on community-engaged research approaches. NIEHS staff received invitations to present on these topics and engage in national discussions about the use of community-engaged research and citizen science, which led to the development of a framework to facilitate conversation on distinctions between CEnR and CitSci. ([APHL, Lab Matters, 2015](#)) To further inform the conversations, the PEPH Network organized webinars, created a podcast and hosted a PEPH Annual meeting focused on this topic. ([2017](#))

Furthermore, the PEPH Network, through its extensive coordination and communication focus has amplified the accomplishments and work of grantees and community partners. PEPH has been an effective mechanism for communicating environmental public health work supported by the NIEHS Division of Extramural Research and Training. The Environmental Health Chat podcast series has become a valuable product and recognized within the Public Health field. They are listed on the “Top 30 Best Public Health Podcast” as well as the “45 Awesome Podcasts for Public Health Students & Professionals.”

See full description of accomplishments in Appendix 1. Mr. Liam O’Fallon presented the PEPH accomplishments and benefits to Council in February 2020, those slides are included in Appendix 2.

## 10-Year Vision (2022-2032)

The new PEPH vision builds upon the unifying environmental public health framework for the Division of Extramural Research and Training (DERT) as well as the institute. PEPH affirms the division’s on-going commitment to community engaged research and strong foundation in environmental public health, which we have defined as *the science of conducting and translating research into action to address environmental exposures and health risks of concern to the public.*

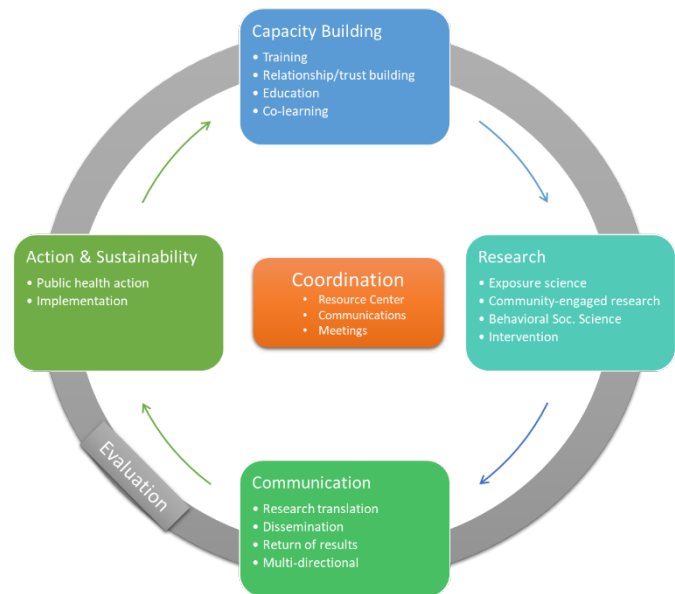
For the next 10 years, PEPH will be an incubator for ideas and an amplifier for key messages. PEPH will strengthen its role as a Community of Practice. In this capacity, PEPH will bring together NIEHS staff, grantees from different programs, and other partners to grapple with complex issues and identify gaps and opportunities around four key areas in environmental public health: **(1) capacity building, (2) research, (3) communication, as well as (4) action and sustainability.** PEPH, in partnership with the NIEHS Communication Office, will also enhance its efforts to produce quality materials to raise awareness of environmental health topics by promoting the work of NIEHS-funded grantees.

PEPH will add a new focus to its framework – ACTION and SUSTAINABILITY. While the original PEPH framework highlighted the intersectionality of these areas, this updated framework focuses on the process of community engaged research from partnership building (Capacity Building) to the implementation of public health actions and continued partnerships (Action and Sustainability).

Highlighted below are key efforts that will be central to PEPH moving forward. Each item is connected to recommendations received over the last two years and mapped to the new PEPH Framework.

### Antiracist agenda

The updated PEPH vision will be grounded with an antiracist agenda. In this context, we want to make sure that PEPH efforts and activities are not contributing to ongoing systems that have historically disenfranchised certain communities and populations. We will examine how our NIEHS-funded programs (within PEPH) help to address and dismantle these systems thereby enabling equitable access to funding opportunities as well as ensuring equitable benefit from the outcomes. PEPH will help facilitate discussions on power balance issues in community-university partnerships and strategies to address them. In addition to convening conversations, PEPH could help with training efforts and other on-going activities at NIEHS working to promote a more equitable society.



#### Recommendation source:

- Antiracism discussions
- Listening sessions
- PEPH 2020
- EHD/EJ Workshop 2021

#### PEPH Framework Elements:

- Coordination
- Capacity Building
- Research
- Communication
- Action & Sustainability
- Evaluation

As part of this effort to establish this antiracist agenda, we will actively seek input and guidance from community partners affiliated with currently funded NIEHS programs and projects. Those individuals involved will be appropriately compensated for their time.

### Collaborative & facilitating role

The PEPH will be an incubator for ideas. Its greatest value over the past 12 years has been to enable conversations across the different grant programs on cross-cutting issues, as well as to highlight the accomplishments of NIEHS-funded projects within the PEPH Network. Therefore, PEPH will use its framework and utilize a variety of approaches and tools to bring people to the table (virtually and face-to-face) on emerging and important topics to environmental public health, such as (but not limited to) the dialog on “innovation,” best practices in community-engaged research approaches, implementation science, or precision environmental health. PEPH could consider ways to foster working groups on topics such as (but not limited to) Environmental Health Literacy, STEM Education, or Environmental Justice. These conversations could lead to publications (peer-reviewed and gray literature), guidance documents, and the advancement of environmental public health practices.

#### Recommendation sources:

- Director’s 5 Values
- PEPH 2020
- Listening Sessions
- EHD/EJ Workshop 2021

#### PEPH Framework Elements:

- Coordination

PEPH will expand to include involvement of all NIEHS staff members. To date, the PEPH Network has been focused on the efforts within the NIEHS Division of Extramural Research and Training (DERT). There are opportunities for PEPH to take on a more holistic structure and to include participation of members from the other NIEHS Divisions that are involved in environmental public health activities. For example, this effort could dovetail nicely with the newly established NIEHS EHD/EJ Faculty that organized the EJ workshop. Engaging with other NIEHS staff members will ensure that environmental public health and community engagement efforts are reflected across the institute. Additionally, PEPH could offer opportunities for NIEHS trainees to learn from and engage with grantees.

PEPH will engage with the organizations that are a part of the NIEHS Friends and Partners groups. In much the same way that community partners who are a part of grant programs are welcome to participate in meetings, we will seek to encourage the involvement of the organizations involved in the Friends of NIEHS and Partners groups since their role is to share insights of current issues at the local and national levels.

PEPH will engage with other NIH Institutes, Centers, and Offices (ICOs). There is growing appreciation for community-engaged practices to address a range of health issues facing communities that have been and continue to be marginalized. PEPH, as a community of practice, can help to facilitate shared conversations on these cross-cutting issues and approaches.

### Action-oriented and Sustainable

PEPH will take a “cradle-to-grave” focus on community-engaged projects and programs. Over the years, a vital message from conversations with grantees has been the need for time to build relationships and financial support to sustain them between grant funding. PEPH will identify the best approaches for doing that through strategic and focused discussions among PEPH workgroup members from across the institute. PEPH will integrate recommendations, as appropriate, into on-going programs and planned efforts at NIEHS as it relates to building the capacity of all partners, sustaining relationships, reporting back research results, and encouraging action-oriented project plans.

PEPH will advance and promote successful approaches in community-engaged research. Two key tenets of PEPH have been its focus on and commitment to community engagement and the translation of research into public health action. Discussions at many of the PEPH meetings emphasized the need for research to be relevant and actionable to the communities served. In addition to facilitating conversations and promoting these approaches, PEPH will also examine ways in which it can further support the science of community engagement.

### Measuring Success

PEPH will promote and use frameworks that are responsive to community needs. At the PEPH 2020 meeting, participants emphasized the need to appreciate qualitative research approaches for evaluation, as well as to build community capacity in evaluation approaches. PEPH will examine ways to provide technical assistance to community groups, academics, and other partners seeking to evaluate their community-engaged efforts, including work related to EHL, community agency, and action. Additionally, PEPH will analyze and evaluate its contributions to environmental public health.

PEPH will emphasize the importance of evaluation from the onset of projects. In conversations throughout the year, the extramural community has expressed the need for evaluation to be integral to research project proposals, not just added on at the end. The PEPH workgroup can explore the best and most appropriate ways to integrate evaluation language into funding opportunities and review criteria.

#### Recommendation sources:

- WHEJAC
- PEPH 2020
- Listening Sessions
- EHD 2013
- EHD/EJ Workshop 2021

#### PEPH Framework Elements:

- Coordination
- Capacity Building
- Research
- Communication
- Action & Sustainability
- Evaluation

#### Recommendation sources:

- PEPH 2020

#### PEPH Framework Elements:

- Coordination
- Capacity Building
- Evaluation



## Next Steps

### Re-design the PEPH Workgroup:

As we roll-out PEPH 2.0, we will include representatives from each of the NIEHS Divisions and Offices. The PEPH Workgroup would be action-oriented and organized around teams focused on the key elements of PEPH:

1. Coordination
2. Capacity Building
3. Research
4. Communication
5. Action & Sustainability
6. Evaluation

Each one of these teams would have co-leads who possess the subject matter expertise and understanding of the field. The goal is to foster even greater interactions and coordination among NIEHS staff in these topical areas related to environmental public health. The intent is to leverage the collective knowledge and promote connections across programmatic areas.

### Re-engage Council:

In the updated PEPH, we will bring back Council Liaisons to enable consistent and sustainable information sharing on environmental public health topics.

### Organize and host a PEPH retreat:

The purpose of the retreat would be to bring in the PEPH working group and council liaisons to formulate a logic model and draft a framework for action. The retreat would be an approach to flesh-out the next PEPH concept. Additionally, participants will define and identify activities within each of the six PEPH elements. While council liaisons would be encouraged to identify gaps and opportunities, they would not be a part of any possible grant program discussions.

### Organize and Host PEPH 2023

In the first quarter of 2023, host a meeting to discuss the revised structure and the aims based on the feedback over the years and from the PEPH workgroup retreat. A goal of the meeting will be to obtain additional feedback from the extramural community and set priorities and tangible next steps.

## Summary

Since 2009, the PEPH program has served as a community of practice for scientists, community members, educators, health care professionals, public health officials and policy makers. PEPH has become a well-recognized coordination and communication program for NIEHS.

This new vision builds upon the past successes and outlines focus areas that respond to key opportunities identified by our extramural community. Through continued support of PEPH and including broader participation of other NIEHS staff, the institute will further advance its leadership in environmental public health. Establishing action-oriented workgroup teams on capacity building, research, communication, action and sustainability, evaluation, and coordination will re-invigorate the PEPH community of practice and provide a sharper focus of opportunities for the institute that leverages

on-going commitments. This structure is also well-suited to help the institute respond to topics, issues and concerns in a cross-cutting manner and to communicate a coordinated message to all partners, including NIEHS leadership.

When we look back at PEPH in 2032, we will see how NIEHS staff have come together with grantees, community partners, as well as state and Federal partners to identify, discuss and act upon critical topics in environmental public health. We will have helped to enable a broader, more diverse environmental public health workforce, we will have developed and promoted tools for community engagement, and we will have informed new directions in training, research partnerships, communication, and evaluation.

## Informing the Next10-year Vision

Recognizing the value of input from the extramural community, DERT staff members engaged with grantees and others to identify areas to focus on for the next 10 years. The updated PEPH vision was informed by several key sources of input, including:

- Annual PEPH Meeting ([February 2020](#))
- EHS Core Centers - Systemic Racism Discussions (on-going [July 2020](#) to present)
- NIEHS Director's Five Values Discussions ([January 2021](#))
- HBCU/MSI Listening Sessions (Summer 2021)
- NIEHS EHD/EJ Faculty Workshop ([December 2021](#))

The new PEPH vision was also shaped in part by the ongoing pandemic, racial justice discussions, and other concurrent NIEHS/DERT events that had environmental public health relevance.

### Annual PEPH Meeting: "PEPH 2020"

In February 2020, DERT program staff hosted a grantee meeting with the goal of seeking input on the opportunities for PEPH moving into the future. Recognizing the timeless focus of the overall PEPH Framework, the meeting was structured around the original elements:

- Research
- Capacity Building
- Communication
- Evaluation

The research, communication, and capacity building sessions included short presentations followed by four breakout sessions on topics within each theme. The evaluation session included a panel discussion as well as a rapid rotation discussion, where participants were invited to answer and discuss questions on flip charts. In the final session of the conference, attendees participated in online dot voting of the different recommendations that emerged from the main sessions: Research, Capacity Building, Communication, and Evaluation. [The full meeting report can be accessed and downloaded online from the PEPH webpage.](#)

### Research

Recommendations included:

- Develop best practices for initiating community engagement and community-engaged research projects. This could include training videos for both trainees/researchers on community-engaged research as well as training videos for community members on the research process.
- Develop a more interdisciplinary approach in research and engagement that include lawyers, anthropologists, communication experts, exposure and mechanistic scientists, industry partners, regulators, and public health departments representing urban and rural communities.
- Consider the importance of equity in resource distribution and decision making.
- Build capacity for a Community Ethics Review Board.

#### The top three

1. Funding mechanisms should include resources for communities, including paid community liaisons, (opinion leaders), advisors with indigenous expertise
2. Interdisciplinary approach
3. Rolling Research to Action RFA

- Develop and disseminate low-cost sensors that are affordable for communities and fit technical capacities.
- Quantify the accuracy of citizen science tools with known standards and provide instrumentation validation for communities.
- Develop standards for data ownership and confidentiality with communities.

### Capacity Building

Recommendations included:

- Provide money to community-based organizations (CBO) through Community Action Supplements.
- Develop bi-directional training for communities in research processes and for researchers in community engagement to improve power sharing and equitable decision making.
- Increase funding for environmental health teacher education experiences so they can build capacity and bring information back to their students.
- Create a PEPH Community of Practice for STEM education.
- Develop joint institute funding mechanisms with NIEHS and other organizations such as the National Heart, Lung, and Blood Institute (NHLBI) to reach a broader group of researchers, including more medical professionals.
- Award designated titles to medical institutes to recognize excellence in environmental health education and have criteria for earning this designation.
- Develop grants to fund relationship development, research planning, and capacity building between universities and community-based organizations separate from research grants.
- Develop outreach and technical assistance to bring new partners and researchers into the environmental health pipeline.
- Changes in study sections to better account for Research to Action grants, community engagement, and research projects that are not strictly focused on health outcomes.

#### Top four

- Grants to fund relationship development, research planning, and capacity building between universities and community-based organizations separate from research grants
- Provide funding to CBOs through Community Action Supplements so they can lead action campaign
- Bi-directional training of CBOs in research/ researchers in community engagement
- Changes in study sections to better account for Research to Action grants, community engagement, and research projects that are not strictly focused on health outcomes

## Communication

### Recommendations included:

- Develop guidance for accommodating culturally appropriate norms for group engagements, such as providing food at meetings.
- Support gap funding between research grants that focus on the community partnership as a way to sustain relationships and community trust.
- Link result report back to action by facilitating individual and collective action to reduce exposures and improve health based on community input.
- Talk to fellow scientists about the importance of including result report back in research.
- Develop an EHL working group and workshop with the goal of community empowerment and recognition of varied community expertise and to identify and share successful examples of EHL and community change.
- Offer more social media training ranging from basic to advanced.
- Collaborate with communication scientists to inform strategy, create tools for measurement, and use social media for behavior change.
- Identify social media best practices and create and disseminate social media toolkits across the network.

#### Top Three

1. Support gap funding to sustain relationships and community trust.
2. Develop EHL working group and workshop designed with goal of empowerment and recognition of varied (community) expertise
3. Link report-back to action

## Evaluation

### Recommendations included:

- Encourage researchers to look more closely at frameworks that acknowledge what communities want more qualitative information. Currently there are a variety of frameworks for doing evaluation beyond quantitative techniques that researchers could leverage for environmental health research and engagement.
- Identify opportunities to expand qualitative research in the field to look at how researchers are addressing community capacity related to EHL, impact, and action.
- Identify best practices to continually foster community partnerships.
- Build agency in communities and evaluate what that means for communities and community partners.
- Track skills, knowledge, and experience possessed by communities and researchers, and examine how it is changing over time.

#### Top Three

- Evaluation works best when it is baked into the program from the beginning; use external evaluators when needed; make sure evaluation activities are linked to aims – or even have evaluation as an aim
- Value the stories that community partners tell as meaningful evaluation metrics
- Evaluation can and should include a variety of measures – impacts, process, quantitative, qualitative

## Systemic Racism Discussions

The PEPH Network recognizes that system racism has been around for centuries. We have examined the environmental and health outcomes of these systems in the context of environmental health disparities and environmental justice; however, until the tragic murder of George Floyd (May 25, 2020) and the ensuing protests and calls for greater introspection, did we begin to name and accept racism in environmental public health.

At the NIH, the NIEHS, and within segments of the PEPH network, dialog has been taking place on strategies for dismantling systems that have disproportionately advantaged certain groups while simultaneously disempowering others. Discussions have tended to focus on workforce structures and on socio-political systems that disproportionately expose certain populations to harmful chemicals. These discussions and the recommendations that emerge are relevant to PEPH and can help to inform the next ten years. Cross-cutting topics include:

**Socio-political systems** – Examining how these systems and policies contribute to EHD and what approaches can be developed and implemented to bring about EJ and health equity.

**Spheres of influence** – The recognition that we all have a role to play in bringing about change, but that it is defined by our spheres of influence.

**Workforce** – Building the capacity of next generation researchers, as well as addressing the systems and structures that are/have been in place that have reduced/prevented access to educational and job opportunities.

**Role of grant programs** – Consider the ways in which funding opportunity announcements are developed, promoted, and evaluated. How are they inadvertently contributing to disparities? How can they be better developed to meet the needs of researchers and communities facing health disparities?

Priority recommendations from the EHS Core Center Program with PEPH relevance include:

- Establish a unified and integrated antiracist agenda
- Strengthen structures, approaches, and opportunities for community partners to be a part of the decision-making process. Make sure that they get paid for the work they do.
- Examine new approaches to Stakeholder Advisory Boards.
- Develop funding opportunities for community-university partnerships
  - Pilot funding
  - Partnership building
  - Research
- Reflect on review process and how it may contribute to disparities in funding
- Examine power balance issues in community-university partnerships and strategies to address them
- Develop training and workforce development initiatives to foster stronger and sustainable partnerships

In early 2021, the White House affirmed the importance of addressing environmental injustice by establishing a new White House Environmental Justice Advisory Council (WHEJAC), in addition to signing an Executive Order focused on Climate Justice. Several current and former NIEHS grantees are a part of the WHEJAC. These actions and recommendations align to the PEPH Network and its goals.

- **WHEJAC – Recommendations --**  
<https://www.epa.gov/environmentaljustice/white-house-environmental-justice-advisory-council-final-recommendations>

**Recommendation to NIEHS (PEPH-relevant):**

NIEHS should reinstate its Environmental Justice through Communications grant program (see text box) that supported the development of Community Principal Investigators and partnerships between academic research centers and community organizations that carried out Community-Based Participatory Research, community education on environmental health, and translation of research to policy and action. These partnerships have been evaluated to increase the quality and dissemination of research, provide communities with relevant data, support citizen science, and create trust.

\*NOTE\* In early April 2022, NIEHS provided a response to the HHS Office of Environmental Justice regarding this recommendation.

- EO -- <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/>
- EO -- <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/05/28/executive-order-on-advancing-equity-justice-and-opportunity-for-asian-americans-native-hawaiians-and-pacific-islanders/>

Finally, in 2021 the NIEHS established a cross-institute faculty focused on EHD and EJ. As part of that group, they are convening workshops to listen and learn from academics, community residents, and others to inform recommendations for the institute. Many of these recommendations will likely synergize with PEPH efforts.

**White House Environmental Justice Advisory Council members with NIEHS connections:**

- Peggy Shepard
- Beverly Wright
- Robert Bullard
- Juan Parras
- Vi Waghiyi
- Rachel Morello-Frosch
- Richard Moore
- Angelo Logan

**“Environmental Justice: Partnerships for Communication” FOAs.**

The [first RFA was released in 1994](#) -- and continued until 2007. [The final RFA was announced in 2003](#). An analysis of the program was published in a [special issue of AJPH in 2009](#).

**Program Goal–**

“The intent is to promote health research, education and intervention programs that address improved ways to serve low income, immigrant, and minorities who may be disproportionately exposed to environmental and occupational stressors. This component of the research program in environmental justice is designed to encourage community outreach, training, research, education and evaluation efforts that will become the catalyst for reducing exposure to or reducing the health impact from environmental and occupational stressors in underserved populations.

The main objective of this RFA is to establish methods for linking members of a community, who are directly affected by adverse environmental or occupational conditions, with researchers and health care providers and to create partnerships that can address environmental and occupational health problems and develop appropriate research and policy strategies to impact public health.”

## EHD/EJ Workshop

On December 10, 2021, the NIEHS EHD/EJ Faculty convened a workshop, “Addressing Racism As a Public Health Issue Through the Lens of Environmental Health Disparities and Environmental Justice.” Several key points relevant to PEPH emerged:

- **Action-oriented.** Move beyond talking and data collection, need to translate science for decision making. Encourage research to move quickly to action.
- **Capacity building for decision makers.** Need to build their awareness and understanding of environmental health.
- **Capacity building for community members.** Value and strengthen their skills as leaders. Enable them to be recognized as the experts.
- **Coordination across Federal partners.** Consider creative opportunities to work together to address community concerns, especially EJ issues.
- **Time for partnership building.**
- **Grant Reviews.** For programs requiring community-engaged approaches, it is essential to have community partners as well as academic community-engaged research experts.
- **Engage HBCU and MSI researchers.** This academic community has not been a part of the conversations and they have a lot to offer.
- **Racism as a barrier to change.** There is a need and opportunity to stimulate conversations among community-engagement teams to think about how to dismantle institutional racism.

## Director’s Five Values

1. Leadership at all Levels
2. Promote Innovation
3. Nurture Collaboration
4. Enhance Communication
5. Strengthen workforce through diversity

In January 2021, the NIEHS Director, Rick Woychik, [outlined the following five values in his first Director’s Corner series](#). He then embarked on a campaign to seek input from across the Institute and the grantee community on what these five values mean to them. During conversations with the EHS Core Center Community Engagement Cores, there was a thoughtful discussion around the definition of “Innovation” and what that means in the context of environmental public health compared to fundamental research.

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*“...we should adopt the latest and greatest technological advancements from across the biomedical sciences. Developing new technologies and approaches will help to fill gaps in our current experimental designs. We need to establish a collective mindset in which we approach every idea as a gift that can be shared, built upon, and enhanced in a way that moves our critical research to the next level.”*

*--Rick Woychik*

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Members of the Community Engagement Cores emphasized that “innovation” should be seen more than just a technological advancement. In the context of community engagement, often the most



impactful approach is not necessarily an innovative one, rather, it may be the application of a proven approach in a new setting. Furthermore, they noted the role that the **PEPH Network could play in fostering a more robust conversation on this cornerstone concept for the NIEHS and the NIH**. As part of the conversation, the CEC teams brainstormed different words they associated with the term “innovation.” Here are a few:

- Accept new ways of thinking
- Boundary spanning
- Challenge existing paradigms
- Get outside comfort zones
- Integrate new disciplines and approaches
- Intersections
- Non-traditional partnerships
- Share power to assure equitable engagement
- Tackle old ideas with new people
- Transformative

### Listening Sessions with Historically Black Colleges and Universities (HBCUs) and Minority Serving Institutions (MSIs)

In the Summer of 2021, the Division of Extramural Research and Training organized a series of listening sessions with HBCUs and MSIs to hear from them about their needs and barriers in the context of successfully applying for NIH funding. While the focus was broad, participants expressed comments about community-engaged research and environmental justice, which are relevant to the PEPH Vision. Key comments and recommendations include:

- Funding to establish community-university partnerships at HBCUs and MSIs
- Funding to nurture a pathway to sustainability
- Equity in funding to community groups
- Improved evaluation/assessment of authentic community partnerships

## Appendix 1: Recommendations Table

The following table is a compilation of the key recommendations that emerged over the last two years.

Recommendation	Source
<b>Research</b>	
Funding mechanisms should include resources for communities, including paid community liaisons, (opinion leaders), advisors with indigenous expertise	PEPH 2020, Antiracism
Interdisciplinary approach	PEPH 2020,
Rolling Research to Action RFA	PEPH 2020,
Develop best practices for initiating community engagement and community-engaged research projects.	PEPH 2020,
Consider the importance of equity in resource distribution and decision making. Examine power balance issues in community-university partnerships and strategies to address them	PEPH 2020, Antiracism, Listening sessions
Build capacity for a Community Ethics Review Board	PEPH 2020,
Develop and disseminate low-cost sensors that are affordable for communities and fit technical capacities.	PEPH 2020, PEPH 2017
Quantify the accuracy of citizen science tools with known standards and provide instrumentation validation for communities.	PEPH 2020,
Develop standards for data ownership and confidentiality with communities	PEPH 2020,
Identify funding opportunities that can be used to support specific areas/activities: environmental justice research capacity building/infrastructure multi-disciplinary projects	Listening Sessions, Antiracism
<b>Capacity Building</b>	
Grants to fund relationship development, research planning, and capacity building between universities and community-based organizations separate from research grants	PEPH 2020, Antiracism, Listening Sessions
Provide funding to CBOs through Community Action Supplements so they can lead action campaigns	PEPH 2020, Antiracism
Bi-directional training of CBOs in research/ researchers in community engagement	PEPH 2020,
Changes in study sections to better account for Research to Action grants, community engagement, and research projects that are not strictly focused on health outcomes	PEPH 2020,
Develop bi-directional training for communities in research processes and for researchers in community engagement to improve power sharing and equitable decision making.	PEPH 2020, Antiracism
Increase funding for environmental health teacher education experiences so they can build capacity and bring information back to their students	PEPH 2020,
Create a PEPH Community of Practice for STEM education	PEPH 2020,
Develop joint institute funding mechanisms with NIEHS and other organizations such as the National Heart, Lung, and Blood Institute (NHLBI) to reach a broader group of researchers, including more medical professionals	PEPH 2020,
Award designated titles to medical institutes to recognize excellence in environmental health education and have criteria for earning this designation	PEPH 2020,

Develop outreach and technical assistance to bring new partners and researchers into the environmental health pipeline	PEPH 2020, Listening sessions
Reflect on review process and how it may contribute to disparities in funding	Antiracism
Bring back “EJ Partnerships for Communication”	WHEJAC, Antiracism, PEPH 2013
<b>Communication</b>	
Develop EHL working group and workshop designed with goal of empowerment and recognition of varied (community) expertise	PEPH 2020,
Develop guidance for accommodating culturally appropriate norms for group engagements, such as providing food at meetings	PEPH 2020,
Offer more social media training ranging from basic to advanced	PEPH 2020,
Identify social media best practices and create and disseminate social media toolkits across the network	PEPH 2020,
<b>Action &amp; Sustainability</b>	
Develop training and workforce development initiatives to foster stronger and sustainable partnerships	Antiracism
Support gap funding to sustain relationships and community trust.	PEPH 2020, Antiracism
Link report-back to action	PEPH 2020, PEPH 2018, PEPH 2017
<b>Evaluation</b>	
Evaluation works best when it is baked into the program from the beginning; use external evaluators when needed; make sure evaluation activities are linked to aims – or even have evaluation as an aim	PEPH 2020,
Value the stories that community partners tell as meaningful evaluation metrics	PEPH 2020,
Evaluation can and should include a variety of measures – impacts, process, quantitative, qualitative	PEPH 2020,
Encourage researchers to look more closely at frameworks that acknowledge what communities want and qualitative information.	PEPH 2020,
Identify opportunities to expand qualitative research in the field to look at how researchers are addressing community capacity related to EHL, impact, and action	PEPH 2020,
Identify best practices to continually foster community partnerships	PEPH 2020,
Build agency in communities and evaluate what that means for communities and community partners	PEPH 2020,
Track skills, knowledge, and experience possessed by communities and researchers, and examine how it is changing over time	PEPH 2020,
Improve evaluation/assessment of community partnerships	Listening Sessions
Examine the review process and how it may contribute to disparities in funding	Antiracism
<b>Coordination</b>	
Establish a unified and integrated anti-racist agenda	Antiracism
Convene conversations around timely topics such as “innovation”	5 Values

## Appendix 2: Description of Accomplishments Research

- Environmental health disparities & Environmental Justice**

Soon after establishing the PEPH Network, we organized an annual meeting focused on environmental health disparities and environmental justice since it was (and remains) a cross-cutting topic of importance to NIEHS grantees. (2013) The meeting brought together over 200 researchers, community residents, health care professionals, and funders to consider ways to address environmental health disparities (EHD) and environmental justice (EJ) issues and to identify actionable recommendations. Participants emphasized the importance of community engaged research approaches, the need to build capacity of researchers and community-based organizations, and the value of reporting back research results.

- Tribal Engagement**

Through interactions at PEPH meetings, there has been an increased attention to tribal environmental health. Discussions at PEPH meetings among participants helped to inform an [important workshop on Traditional Ecological Knowledge](#) (2015). Program staff working with grantees and community partners identified and recognized the need to focus on TEK. An outcome of the workshop was the inclusion of language in the Research to Action funding opportunity announcement inviting research that explores or validates TEK as part of an environmental health sciences research application.

In partnership with the NARCH program, we have supported the [Tribal Environmental Health Summit](#) to build a broad network of Native American and Alaskan Native researchers.

- Community-engaged research & Citizen Science**

Central to the PEPH Network is its commitment to community engagement. The PEPH focus enabled NIEHS to respond promptly and thoughtfully to national conversations in 2014 around the use of Citizen Science by Federal programs. NIEHS became a resource for information on approaches regarding community engagement in research. NIEHS staff received invitations to present on these topics and engage in national discussions about the use of community-engaged research and citizen science, which led to the development of a framework to facilitate conversation on distinctions between CEnR and CitSci. (APHL, Lab Matters, 2015)

To further inform the conversations, the PEPH Network organized webinars, created a podcast and hosted a PEPH Annual meeting focused on this topic. (2017) Since that time, there has been an observed

The infographic is titled "Citizen Science and Community-Engaged Research in Environmental Public Health" and is attributed to Liam O'Toole, MA, program analyst at NIEHS. It features a central diagram with two main horizontal arrows: a blue arrow pointing right labeled "Research Enterprise Includes CEnR" and a green arrow pointing left labeled "Citizen Science Enterprise". Above the blue arrow are boxes for "Academic Research", "Policy and Practice", "Public and Professional", and "Public and Professional". Below the blue arrow are boxes for "Researcher-Community Partnerships", "Community-Driven Research", and "Community-Driven Research". Above the green arrow are boxes for "Community-Driven Research", "Community-Driven Research", and "Community-Driven Research". Below the green arrow are boxes for "Community-Driven Research", "Community-Driven Research", and "Community-Driven Research". The infographic also includes text explaining the distinctions between CEnR and CitSci, and a quote from NIEHS about the value of training and capacity building for citizen science efforts.

**Citizen Science and Community-Engaged Research in Environmental Public Health**  
 by Liam O'Toole, MA, program analyst, National Institute of Environmental Health Sciences, and Symone Finn, PhD, health science administrator, National Institute of Environmental Health Sciences

Since the 2013 release of the Second Open Government National Action Plan for the United States of America, many federal agencies have promoted, shared and coordinated their citizen science and crowd-sourcing efforts, including best practices to training, capacity building, communication and research, to facilitate partnerships in citizen science. As an organization with a rich history of funding citizen-engaged research, the National Institute of Environmental Health Sciences (NIEHS) has participated in these conversations. Its 2012-2017 Strategic Plan and NIEHS Roadmap for Environmental Public Health program reflect its ongoing commitment to such partnerships.

As program officers at NIEHS, we have been reflecting upon a critical question, "What are the similarities and differences between citizen science and community-engaged research (CEnR)?" We believe that it is important not to confuse one with the other and to appreciate the unique contributions each brings to public health.

To help us answer this question and articulate the shared elements and distinctions, we developed the framework on this page. The conceptual diagram is informed by our programmatic involvement with environmental justice and environmental health disparities grantees and the realization that there are distinct motivations for citizen science and community-engaged research partnerships.

We posit that a scientific question, informed by a principal investigator's expertise and scientific focus, is the predominant motivation for academically-driven research projects. Though community residents may be engaged to develop research questions and approach scientific goals remain primarily academic in nature, tempered by the need for scientific certainty, often accumulate community-engaged research, whereas community concerns about environmental exposures or disease outcomes frequently drive citizen science efforts. Community-led projects may involve an academic research partnership but they reflect a greater urgency for action and near-term translation of findings to reduce harmful exposures and inform public health decision making.

Potential synergies exist between the two enterprises (see dashed arrows). For example, community partners in a research enterprise project may identify new concerns that can lead to citizen science efforts. Similarly, an academic partner in a citizen science enterprise project may recognize new scientific questions to pursue within the research enterprise. So, while the motivations may differ, the two enterprises can support one another.

Given the mission and function of PHLs, we believe that they may be an ideal new partner to assist with capacity building... to facilitate citizen science research.

We perceive that this initial understanding and promotion of citizen science, crowd-sourcing, gaming and DIY (Do It Yourself) efforts have been guided from the research enterprise perspective (see speech bubble). For example, researchers seek community partners to collect more data primarily to answer a research question, which may also address a local concern. There is nothing wrong with this perspective, but as conversations continue, it is important to acknowledge differences in the motivations for citizen science efforts and to consider ways to address both scientific and community needs.

NIEHS recognizes the value of training and capacity building for all research partners to address community environmental health concerns. Given the mission and function of public health laboratories (PHLs), we believe that they may be an ideal new partner to assist with capacity building for both community groups and academic researchers to facilitate citizen science research. PHLs also provide key resources: access to environmental sensors, assistance with sample collection and analysis, and tool testing and validation. Through such training and services, PHLs are well-placed to build the capacity of community groups and academics and assist in federal efforts to improve environmental public health through either community-engaged research projects or community-led citizen science efforts.

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increase in the use of Citizen Science approaches, publications, and creation of citizen science toolkits.

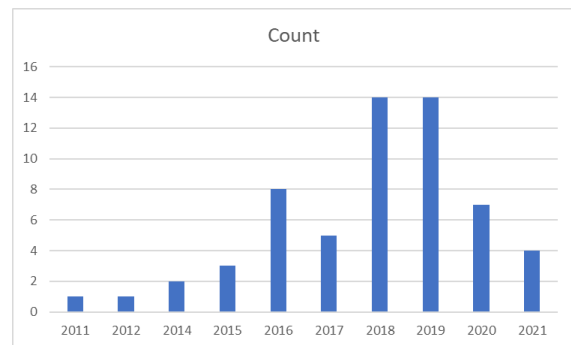
- **Report-back of research results**

In response to increased discussions around this topic, we convened an annual meeting focused on reporting back research results. (2018) The meeting was organized around the why, who, how, and what of report back: Why is report back important? What are the unique contributions from environmental health science? Who are our partners? How do we report back? What is next for the practice? Participants agreed that it is a practice that must be included as part of the research process and that we need to build the capacity of the next generation of researchers.

### Communication Research

- **Environmental Health Literacy**

EHL was an annual meeting topic (2014) to build upon ongoing conversations around health literacy in the context of environmental health sciences. We observed that NIEHS programs had been supporting the development of risk communication strategies, environmental health messages, and informational materials, but little had been



done to examine their impact on EHL or to understand the elements of successful environmental health messages. When looking at the number of times the term “Environmental Health Literacy” is found doing a Pub Med search, the notable increase from 2011 to 2019 corresponds to the time in which NIEHS was engaging with the PEPH Network to advance this concept. Program staff also worked with grantees to author a book on environmental health literacy, which has received over 7,600 chapter downloads from the Springer website.

- NIEHS program staff incorporated EHL into the SBIR/STTR mechanism at NIEHS. (RFA-ES-19-005 and RFA-ES-21-008). The purpose of which is to receive grant applications from small business concerns (SBCs) in collaboration with environmental science researchers to develop novel tools, activities, or materials to build environmental health literacy for a variety of groups, including community members, health care and public health professionals, educators, and students of all ages.

### Capacity Building

- This topic closely aligns to research and communication. Recommendations within past meetings emphasize the need to build the capacity of researchers and community members to work together. During the ARRA Program, we were able to support two initiatives focused on community-university partnership building and STEM education.
- We have also been able to focus and encourage capacity building for Healthcare and Public health professionals. Most recently with our newly established Pediatric and Reproductive Environmental Health Scholars program.

## Evaluation

- **Evaluation Metrics Manual**

The [PEPH Evaluation Metrics Manual](#) provides examples of tangible metrics that PEPH grantees and program staff can use for both planning and evaluation. Example logic models are used to develop evaluation metrics for cross-cutting PEPH themes such as Partnerships, Leveraging, Products and Dissemination, Education and Training and Capacity Building. PEPH grantees (including all project partners) are the primary target audience for this document.

## Coordination & Communication

- [Resource Center](#)

The Partnerships for Environmental Public Health (PEPH) Resource Center facilitates entry, management, viewing, and downloading of educational and outreach materials created by NIEHS grantees who are part of the PEPH network. The PEPH Resource Center fosters the sharing and exchange of materials, which reduces the duplication of efforts and promotes the advancement of new communication strategies.

- [PEPH Newsletter](#)

This monthly newsletter is distributed to almost 5,000 recipients. Feedback has been positive.

- [PEPH Podcasts](#)

Started in 2013, these short podcasts provide a glimpse into environmental public health topics. They are well-received and are listed on the “Top 30 Best Public Health Podcast” as well as the “45 Awesome Podcasts for Public Health Students & Professionals.”

- [PEPH webinars](#)

We usually host 10 per year on a range of topics to highlight new areas or just spotlight exciting grantee work. They are attended by a range of participants from academia, state/federal government, health care, and community-based organizations.

- PEPH meetings

As noted above, PEPH Meetings are a valuable approach to focused conversations that cuts across different NIEHS-funded programs.