



**HERCULES**  
EXPOSOME RESEARCH CENTER

# An Introduction to HERCULES Community Engagement Activities

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Community Engagement Lead



NIH-NIEHS P30 ES019776

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# The HERCULES Exposome Research Center

Who we are and what we do



**The Exposome**  
is the concept that environmental exposures play a role in our health over a lifetime. These exposures include what we eat and drink, the air we breathe, our behaviors and lifestyles, and where we live, work, and play.

**BEHAVIOR**  
Diet, exercise, alcohol and tobacco use, vaccinations, consumer products



**COMMUNITY**

Parks and green space, sidewalks, traffic, social networks, grocery stores, infrastructure

**ENVIRONMENT**

Pollution, allergens, pesticides, climate, water, bacteria

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# HERCULES Community Engagement Core

Programming, partnerships, and community support



## The HERCULES Community Engagement Core (CEC)

The CEC aims to enhance and expand existing relationships between HERCULES and community partners to resolve environmental health issues in the community using exposome principles. We do this by:



1

**Maintain and expand  
multi-directional  
dialogue with the  
Atlanta community**



2

**Guide and support  
HERCULES scientists  
in community  
engagement and  
outreach**



3

**Enhance community  
capacity to address  
local environmental  
health concerns**

**Our primary strategies:**



### **Stakeholder Advisory Board**

Local residents, non-profits, other academic institutions, and government agencies oversee and provide community perspective to CEC activities, offer connections to the metro Atlanta community, and provide guidance to HERCULES to fulfill the CEC mission and improve environmental health and science.



### **Exposome Roadshow and Community Grant Program**

Bring communities together to share the exposome concept, identify their exposome-related perspectives and concerns and support them through funding and technical assistance to organize and address a priority concern. Incorporate their perspectives into exposome science.



### **Science Communication**

Summaries and infographics of HERCULES and environmental health research that is relevant and understandable to the local community. Reporting back research results to communities.



### **Community-Partnered Research**

Support HERCULES scientists who are interested in integrating community-engaged approaches into their environmental health research, and facilitating community-scientist partnerships when appropriate. Prepare future scientists for community-engaged research.



# Stakeholder Advisory Board

**HERCULES**  
EXPOSOME RESEARCH CENTER  
Stakeholder Advisory Board



**Aye Open Outcomes,**  
National HEAL  
*Bren Ames*



**Center for Sustainable Communities**  
*Gary Harris*



**Community member**  
*Julia Campbell*



**Community member, HWG**  
*Taranji Alvarado*



**ASPPH Fellow at EPA**  
*Dana Williamson*



**ATSDR Region IV**  
*Leann Bing*



**CDC**  
*Candis Hunter*



**Emory PEHSU,**  
Morehouse,  
Break the Cycle  
*Leslie Rubin*



**Community member, HWG (retired)**  
*Gil Frank*



**Community member, ECO Action (retired)**  
*Yomi Noibi*



**Community member, Fulton County Board of Health (retired)**  
*Monica Robinson*



**The Conservation Fund**  
*Shannon Lee*



**Atlanta Housing**  
*Priya Vellaithambi*



**US Economic Development Administration**  
*Milton Cochran*



**EPA Region IV, Environmental Justice**  
*Tami Thomas-Burton*



**Emory Urban Health Initiative**  
*Joan Wilson*



**Dichos de la Casa**  
*Karla Blaginin*



**ECO-Action**  
*Carla Lewis*



**Environmental Awareness**  
*Bill Burns*



**GA Trails Alliance, GSU (retired)**  
*John Steward*



**Historic Westside Gardens (HWG)**  
*Rosario Hernandez*



**EPA Region IV, Brownfields**  
*Camilla Warren*



**Georgia Department of Public Health**  
*Franklin Sanchez*



**Georgia Department of Public Health**  
*Faith Flack*



**Georgia State University (GSU)**  
*Roby Greenwald*



**Pathways to Sustainability**  
*Lynne Young*



**Peopletown Revitalization Corp**  
*Columbus Ward*



**Refugee Family Assistance Program**  
*Nasra Mirreh*



**Ubuntu Community Catalyst, Inc.**  
*Mary Wilson*



**West Atlanta Watershed Alliance, Spelman College**  
*NaTaki Osborne Jelks*

## Stakeholder Advisory Board Affiliations

- Community and nonprofit
- Government representatives
- Academic representatives
- Multiple sectors (placed in primary)



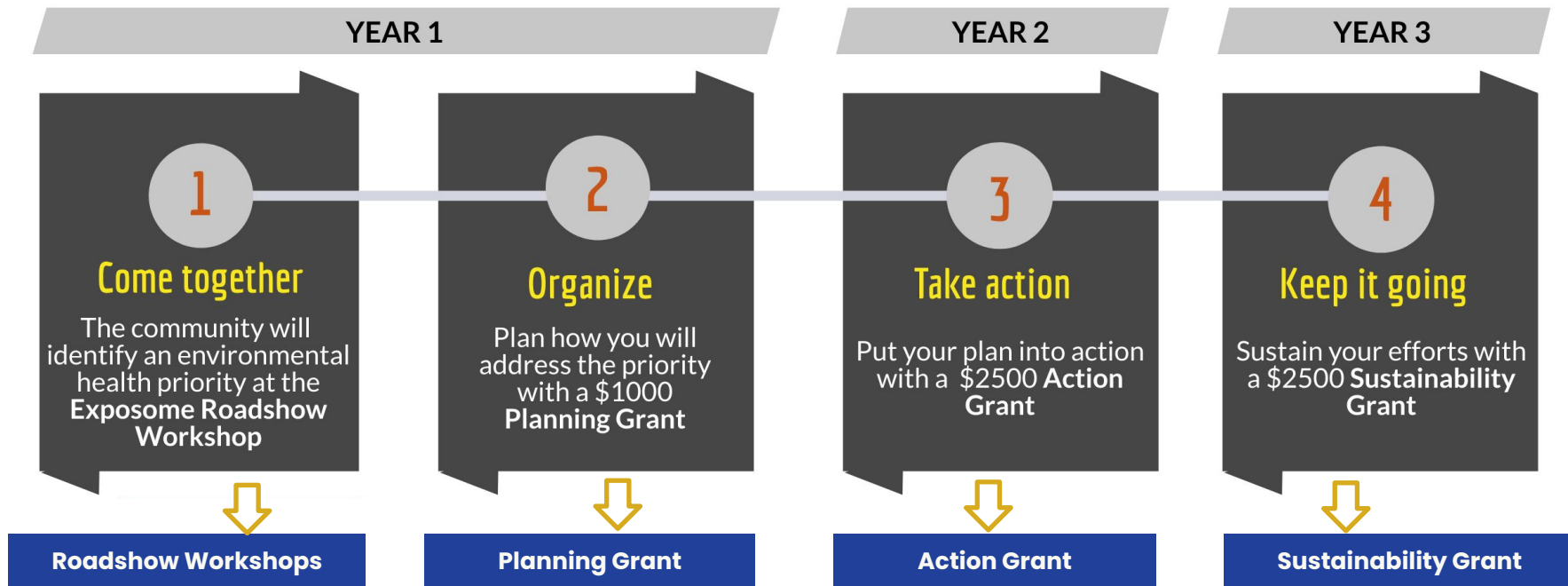
**University of Michigan**  
*Simone Charles*



Clarence Shaheed DuBois

# Exposome Roadshow and Community Grant Program

## A Four Phase Program





# Example: Community C

1

## Come together

The community will identify an environmental health priority at the Exposome Roadshow Workshop

2

## Organize

Plan how you will address the priority with a \$1000 Planning Grant

3

## Take action

Put your plan into action with a \$2500 Action Grant

4

## Keep it going

Sustain your efforts with a \$2500 Sustainability Grant

### Roadshow Workshop:

Came together around a priority issue: **Industrial pollution**

### Planning Grant:

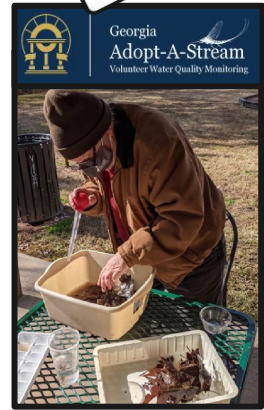
- Coalesced as a group
- Developed action plan to address **air and water quality related to industrial pollution**

### Action Grant:

- **Air:** Promoted use of odor reporting app
- **Water:** Requested government documents

### Sustainability Grant:

Narrowed focus to reduce industrial pollution by **training residents in community science**



# Science Communication and Outreach

## Assessment of Health Risks Associated With Urban Flooding in Atlanta

Tests of microbes and metals in water samples from the Peopletstown Neighborhood

### What did we want to know?

- 1 How are residents being exposed to urban floodwaters?
- 2 What microbes and metals are present in urban floodwaters?

### Why?

Localized flooding is increasingly common due to overwhelmed drainage systems. Standing floodwaters from rainfall and sewage back-up may present a significant health risk to residents.

### What did we do?

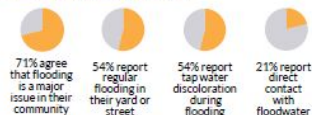
To learn about local flooding in an urban community, we:

- Surveyed 24 community members about their experiences
- Collected water samples from 10 flooding sites to analyze for microbes and chemicals (see picture)



### What did we find?

#### Among 24 Community Members:



#### Among the Water Samples:

7 samples tested positive for *E. coli* at levels considered "High Risk" by the EPA (>253 colonies per 100mL).

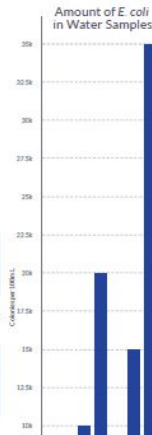
Fecal material (including *E. coli*) can enter the environment from wastewater, sewage, landfills, and animals. The presence of *E. coli* indicates fecal contamination and a higher risk of illness especially through cuts or wounds.

6 samples reported an abundance of antibiotic-resistant genes.



Antibiotic resistance genes (ARGs) exist naturally in bacteria and can make bacterial infections more difficult to treat. The ARGs detected in our samples were likely carried by bacteria that live in the environment and do not typically cause human infections.

Heavy metals were detected at low levels that are not considered a health risk.



### EVERYDAY CHEMICALS IN YOUR EXPOSURE: WHAT YOU NEED TO KNOW

## Reducing toxicants in our homes

There are many potentially harmful chemicals found in homes today. Learn how to avoid them!

### Where can you find them?

#### In things you cook, store, and serve food in

Such as:

- Non-stick pans
- Plastic food storage containers and other flexible plastics



Reduce exposure in your home by:

- Using stainless-steel and cast-iron skillets
- Heat food and beverages in containers that are not plastic, such as glass or ceramic.

#### In your household's air

Such as:

- Indoor mold
- Cigarette smoke
- Pesticides
- Scented products



Reduce exposure in your home by:

- Keeping indoor areas dry use a dehumidifier, ventilate and fix leaks.
- Not allowing smoking inside and/or designating outdoor smoking areas away from your home.
- See below for additional information on pesticides and fragrances

#### In pesticides

Such as:

- Insecticides used to kill insects
- Herbicides used to kill weeds



To reduce pesticides in your home:

- Hand-pull weeds or use weed cloth
- Plant native species and ground covers
- Reduce spores of food and water that attract pests
- Only treat least affected areas
- Use insect baits instead of sprays
- Wash fruits and vegetables and buy organic

#### In your personal care products

Such as:

- Shampoo
- Lotion
- Make-up
- Perfumes
- Hair products
- Fragrances



Reduce exposure in your home by using:

- Products labeled "paraben free"
- Products labeled "fragrance free"
- Personal care products scented with essential oils

#### In cleaning, laundry, and air freshening products

Such as:

- Detergents
- Dryer sheets
- Fabric softener
- Disinfectants
- Surface cleaning products



Reduce exposure in your home by using:

- Organic detergents that don't have "phenols"
- Baking soda and white vinegar as an all-purpose cleaner
- Wool balls instead of dryer sheets
- Fragrance-free cleaning products
- Essential oil diffusers instead of air fresheners

[More >](#)



# Community-Partnered Research

- Encouraging and supporting Emory scientists who want to incorporate community knowledge and expertise into their research
  - Consulting scientists on best practices of community-engagement and partnerships
    - *(such as developing an MOU!)*
- Connecting communities and scientists with relevant interests, expertise, or concerns
- Addressing community environmental health needs/concerns with research
- Community-engaged 1-yr Pilot Research Studies

The screenshot shows a document header with the Emory University logo and the HERCULES logo. The title is "Setting Clear Expectations for Community-Academic Partnerships". Below the title, it asks "How do I use this guide?" and states that collaborators should write down answers to discussion prompts, complete a Statement of Purpose, and revisit/revise answers as the project progresses. It explains that this process creates a memorandum of understanding (MOU) for setting ground rules. A list of seven discussion prompts follows. A callout box on the right says "As part of the HERCULES commitment to anti-racism, we have developed this resource for our members". A green box at the bottom right says "Want more guidance? See the 'Additional Resources' section for more discussion questions and topics".

**EMORY** **HERCULES**  
LIFE-SCALE RESEARCH

## Setting Clear Expectations for Community-Academic Partnerships

*How do I use this guide?*

**Collaboratively, all partners should:**

- Write down answers to the **discussion prompts** listed below
- Complete the **Statement of Purpose** listed on page 2
- Continue to **revisit and revise** your answers to these prompts as your project progresses

Once you've done this, you've created the foundation for a **memorandum of understanding (MOU)** that can be used to set ground rules and manage expectations for research relationships between academic and community partners

**Want more guidance?** See the "Additional Resources" section for more discussion questions and topics

### Discussion Prompts

1. What are our desired outcomes?
2. What is our shared purpose of this research partnership?
3. How does this research benefit each partner, both individually and mutually?
4. What are some of the cultural differences and perspectives between partners that we should keep in mind?
5. How are we collecting, storing, and maintaining data for this project? Who will project data be shared with?
6. What are the expected results of this project? What's the best/worst thing that could happen if this project generates expected results? What's the best/worst thing that could happen if this project generates results that are different from expected?
7. What concerns do you have about this partnership?

# Community-Engaged Research: Guiding Principles Shared with our Faculty



## Context

Your relationship began centuries ago, with many forms of exploitation. And, recent extraction by academics (possibly from Emory).

## INpowerment Science

- Sacoby Wilson, University of Maryland

Recognize & value the power and knowledge already in the community, instead of trying to “bring” them power or taking the role of the “expert.”

## Agendas & Compromise

Accept that there will be multiple agendas & that all partners will need to compromise.

# HERCULES Community Engaged Pilot Grants

Indoor Mold



Rain & Tap Water



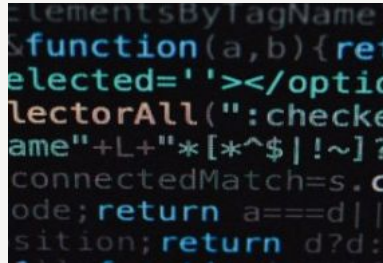
Multiple Chemical Sensitivity & Metabolomics



Urban Gardens & Lead Exposure



Industrial Emissions & Neighborhood Impacts



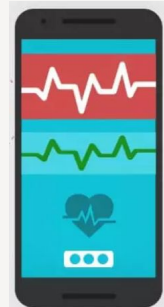
Data Visualization & Neighborhood EH Concerns



Lead levels & retained bullet



Climate Impacts & Pollutants in Coastal GA



mHealth Monitoring Environmental Exposures and Impacts

# Notable Outcomes

- Community-led education & action
- Additional funding to community partners
- New academic-community partnerships
- Media & local gov't attention
- Presentations & Publication (Community co-authored)
- Superfund Designation & Remediation
- Local Industrial Zoning Laws
- Industry-initiated Mitigation
- New research directions
- Helps develop trust in



Removal of unsafe lead begins in contaminated Atlanta neighborhood

Know Hope Series Volume 1, Version 3

# MOLD

## and Health in NPU-V

IS MOLD A HEALTH PROBLEM?

Mold is a fungi that can release harmful toxins that may be bad for your health.

Symptoms of mold-related sickness include:

- feeling tired all the time
- coughing/wheezing
- headaches
- skin irritation/rashes

## Industrial Air Pollution in East Point

Key takeaways from a study done with East Point residents

East Point is home to industrial facilities that periodically emit chemicals called volatile organic compounds (VOCs or sometimes VOCs (VOCs)) into the air of East Point neighborhoods. East Point residents partnered with Emory ARBORES to investigate this industrial air pollution.

### What did we want to know?

- What chemicals are in the air of East Point neighborhoods near industrial facilities?
- What are East Point residents' perspectives and experiences with air pollution?

### What did we do?

- 80 air samples were collected around 3 locations: PFC Incubators, William C. Meredith, and Tri-Cities High School.
- 122 East Point residents responded to a separate survey about community perceived lives on air pollution in East Point, health symptoms and diagnoses, and desire for community action.

### What did we find?

Chemical name	Present in most samples	Highly present in most samples	Known to cause health & environmental problems
2-Chloroethanol (pest repellent)	✓	✓	Indirect environmental pollutant; skin irritation; asthma trigger
Acetone (pest repellent)	✓	✓	Makes your individual indoor air feel "stale"
Toluene	✓	✓	Indirect environmental pollutant; asthma trigger; irritates eyes, nose, and throat
Methylene chloride	✓	✓	Indirect environmental pollutant; asthma trigger
1,1-Dichloroethane	✓	✓	Indirect environmental pollutant; asthma trigger
n-Heptane	✓	✓	Common industrial solvent
Trichloroethylene (TCE)	✓	✓	Indirect environmental pollutant

- Air Sampling**
  - Six chemicals were found in over 50% of the samples.
  - Sixteen other chemicals were identified less frequently.
  - Certain industrial chemicals were higher when residents smelled odors.
- Community Survey**
  - A majority of respondents thought air pollution was a problem and reported smelling chemical odors in their neighborhood.
  - Experienced health symptoms such as headaches, eye irritation, and sleep problems in the past year.
  - Were interested in working with community members on environmental health issues like air pollution.

### What does this mean for you?

While it is difficult to draw conclusions from a small pilot study...



# New in 2024! Community Data Workshops

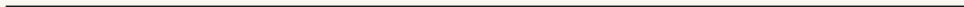
Communities using Data for Change: Tools, Skills, and Resources

Session	Content	Activity/Homework
One	What questions can data answer and what types of data are needed and/or available	Define data question and determine what data is needed to answer question
Two	What data is publicly available/how to access it and how to collect valid data	Find data needed to answer community question
Three	How to communicate data	Receive guidance/feedback from data scientist fellow. Create a data collection plan
Four	Present and refine community data plans	Implement data plan with support from data science fellows.



03

Example

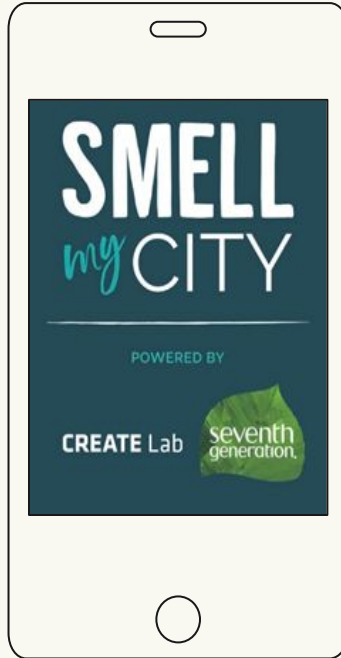




# Engaging with Community - Industrial Air Pollution



Technical Assistance



Roadshow Grant Program



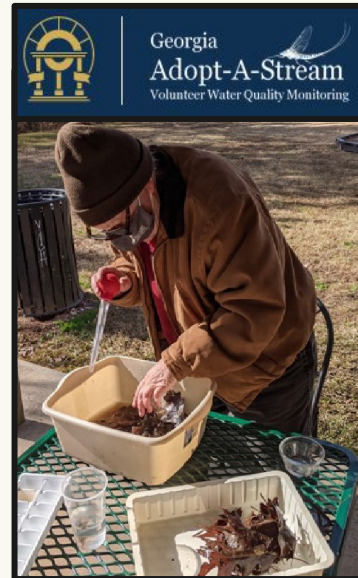
Community-Academic  
Research Partnership

# Engaging with Community - Industrial Air Pollution

## What happened?

### *Roadshow and Grant Program*

- Community members became active in city government, known by mayor and other elected officials.
- Successfully advocated for industrial zoning moratorium.
- Continue to organize around EH issues in their community (e.g., ongoing stream and odor monitoring).





# Engaging with Community - Industrial Air Pollution

## What happened?



Photo credit:  
<https://churchdevinumc.wordpress.com/2020/04/07/smaller-churches-try-zoom-ing-your-worship/>

### What did we find?


Chemical name	Present in most samples	Higher levels when odors reported	Chemical characteristics and common uses
2-butanone ( <i>most frequent</i> )	✓	✓	Solvent, commercial paint strippers, butterscotch smell
Acetone ( <i>2<sup>nd</sup> most frequent</i> )	✓	✓	paint thinner
Toluene	✓	✓	Markers, paint, industrial solvent; Traffic related air pollution
Methylene chloride		✓	Paint stripper
2-hexanone		✓	Paint/solvent
Dichlorodifluoromethane	✓		Refrigerant, "greenhouse gas"
n-hexane	✓		Common industrial solvent
Trichlorofluoromethane	✓		Refrigerant, "greenhouse gas"

**Air Sampling**

- Six chemicals were found in over 50% of the samples.
- Sixteen other chemicals were identified less frequently.
- Certain industrial chemicals were higher when residents smelled odors.

**Community Survey**  
A majority of respondents:

- Thought air pollution was a problem and reported smelling chemical odors in their neighborhood.
- Experienced health symptoms such as headaches, eye irritation, and sleep problems in the past year.
- Were interested in working with community members on environmental health issues like air pollution.



PPG East Point Manufacturing Facility  
1377 Oakleigh Drive  
East Point, GA 30344  
ppg.com

## ODOR MITIGATION PLAN SUMMARY

PPG | East Point, GA Facility

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### SUMMARY

PPG manufactures latex and oil-based paints for residential and commercial architectural finishes in its East Point, Georgia coatings manufacturing facility. In 2021, the East Point plant engaged a third-party expert to conduct a study to assess and evaluate potential causes of odors reported by community members. Based on findings from the study, which were reported out to the East Point community, PPG has developed an odor mitigation plan – detailed below – which focuses on target areas at the plant determined to have the highest potential for causing possible off-site odors. Beginning in late 2021 and continuing through 2022, PPG is implementing odor control technologies and management practices, including capital investments and process analysis.

# Questions?



# Thank you!



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