

# *Ongoing Research on PFAS in Northern Lake County*

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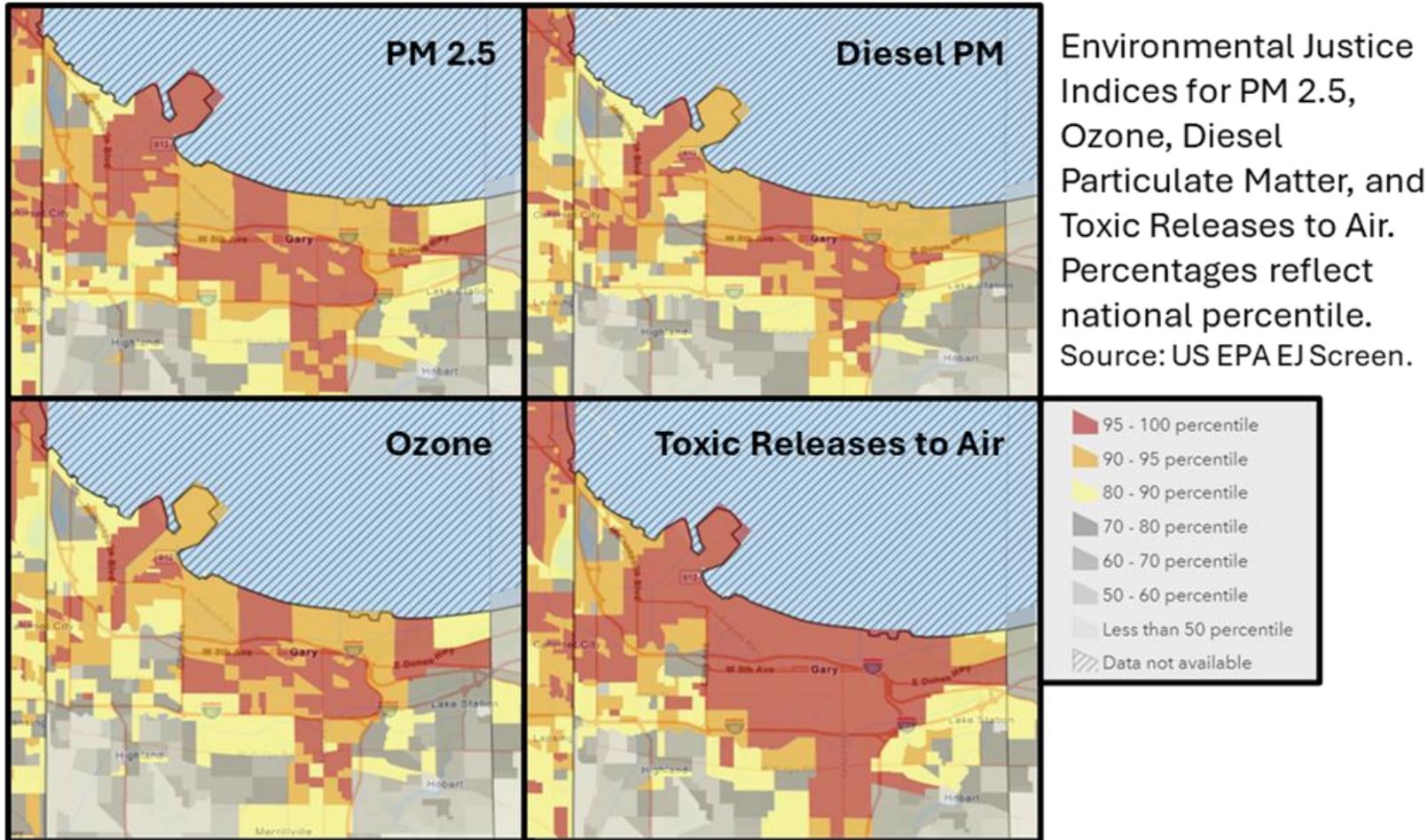
Former residents of the West Calumet Housing Complex. Source: Northwest Times of Indiana.

## *Northern Lake County: long history of pollution*

- Steel manufacturing
- Chemical industry
- Petroleum industry
- High volume transportation
- Superfund/brownfield sites



# Environmental justice issues in northern Lake County



# *Initial efforts*

- “XRF days”
- Supporting community organizations
- Consistent presence





## Characterization and within-site variation of environmental metal concentrations around a contaminated site using a community-engaged approach

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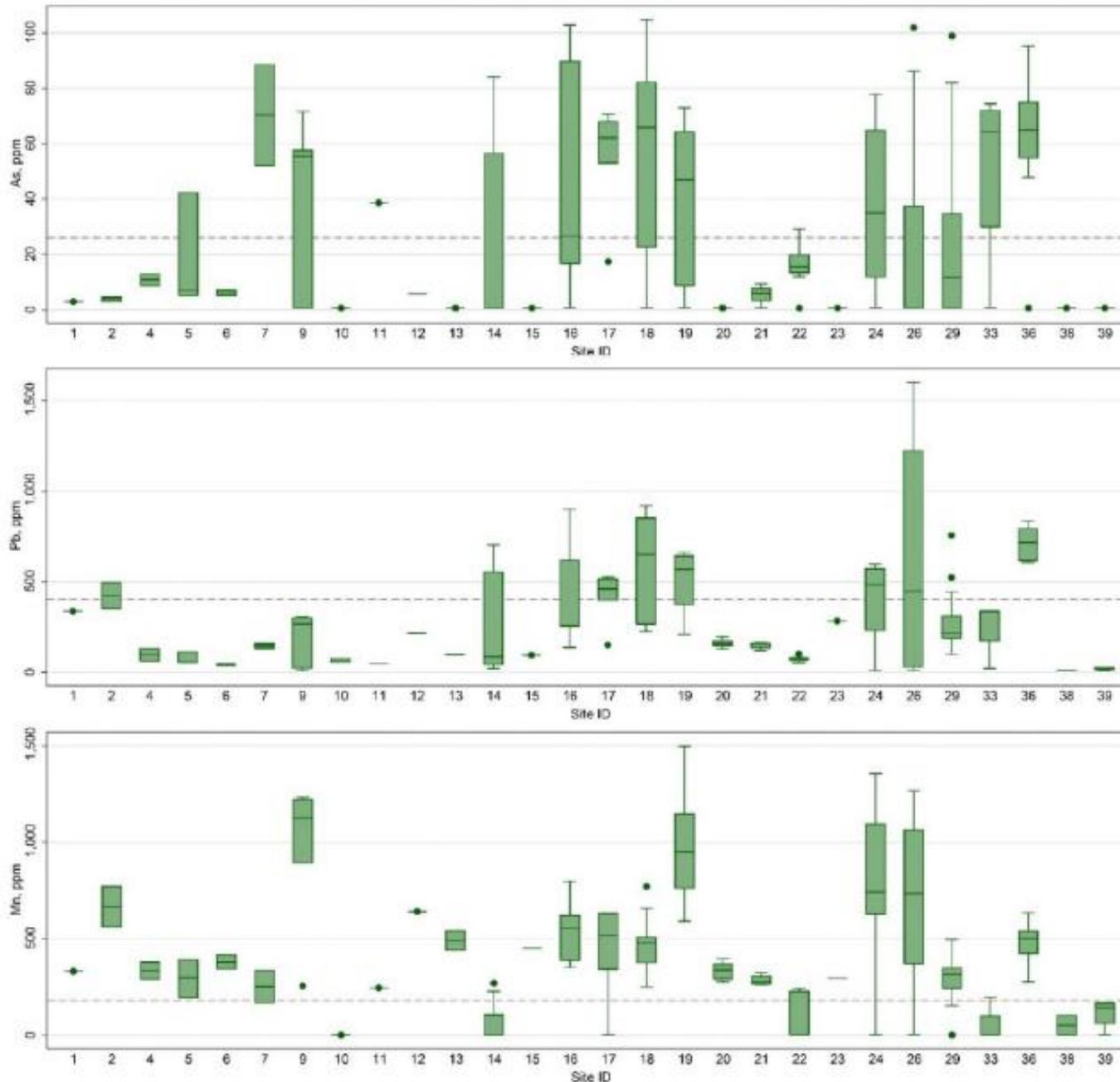
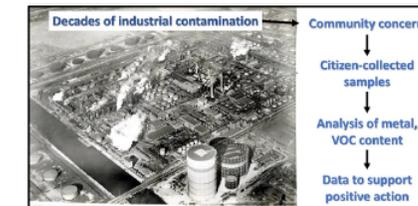
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### HIGHLIGHTS

- Community members collected soil and dust samples from an area with a former lead smelter and lead arsenate manufacturer.
- Many soil samples exceeded recommended US EPA screening guidelines for As (42.4%), Pb (35.4%), and Mn (79.1%).
- Several sites had measurements both above and below screening levels for As (35.7%), Pb (32.1%), and Mn (32.1%).
- Site proximity was associated with soil concentrations exceeding guidelines for As ( $p = 0.028$ ) and Pb

### GRAPHICAL ABSTRACT

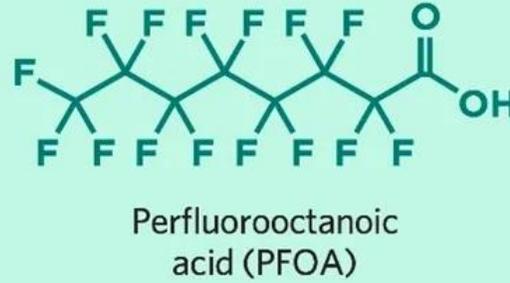
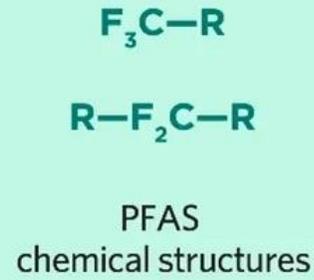


# *Northern Lake County Environmental Partnership*

- Community Advisory Board
- Community Ambassadors
- Collaborations with community organizations
- Involvement of community members in research
- **Requires return support of community initiatives**



**STRUCTURES**



**SOURCES**



Industrial manufacturing

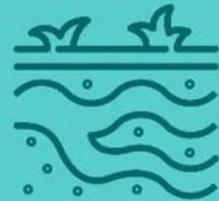


Fire suppressants



Consumer goods

**EXPOSURES**



Environmental bioaccumulation

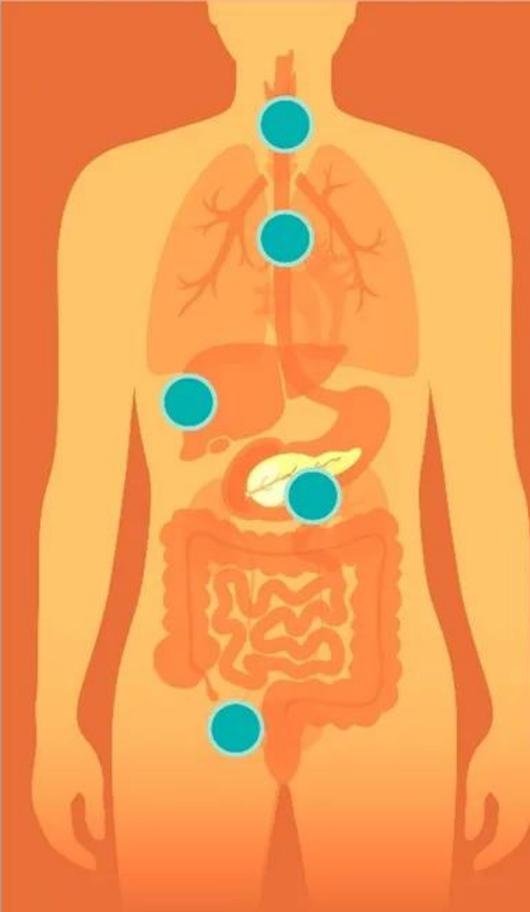


Groundwater contamination



Household exposure

**HUMAN HEALTH RISKS**



- Immune response
- Thyroid function
- Lipid and insulin regulation
- Liver disease and cancer
- Reproduction and development

Source: Priyom Bose, The Scientist, 2025

## *NCLEP's research plan*

- Quantify and describe broad range of pollutants across the region
  - Heavy metals
  - VOCs, PAHs
  - Air pollution (particulate matter)
  - **...and PFAS!**
- Evaluate contaminant exposure with neurological health outcomes
- Prioritize community engagement throughout research

# Epidemiology study

## Cross sectional study to evaluate contaminants vs neurological health

- Goal: ~300 participants
- Metals, air pollutants, PAHs, PFAS
- Cognition, behavior, emotion
- Epigenetic profile
- Extensive questionnaire



### WHAT WE ARE STUDYING

We are studying many pollutants including particles in the air (soot), gas or fumes (similar to gasoline), metals (including lead), and more.

We are going to compare these with rates of general health, cognition or thinking, and mental health.

### Why you should participate

We are recruiting adults and children from northern Lake County.

Information about pollution in the area is incomplete. We need your help to understand its extent.

By participating, you could learn more about pollution in your home, whether you have been exposed, and how that might affect the community's health.

You will receive gift cards worth up to \$50 after you finish participating in the study.

### WHAT HAPPENS IN THE STUDY

#### Home environment

We will give you a kit that you can use to collect soil, dust, and water from your home. We will test these for environmental pollutants.

#### Your exposure

We want to learn how many pollutants you have been exposed to and their impact. To do this, we will ask for samples of your toenails, hair, and saliva. We will also ask you to wear a silicone bracelet for a week.

#### Questionnaires

We will have questionnaires that ask about your demographics, lifestyle, and things that could be related to environmental pollution.

We will ask you to complete some assessments to help us learn more about how your brain works.



# *Some preliminary results*

## Sample size=27

- Mean age: 46.9 (40.4, 53.5)
- 59.2% female, 40.7% male
  
- 85.2% reported using city water
- 51.9% reported using non-stick Teflon pans
  
- 18.5% reported eating fish/seafood once/week
- 37.0% reported eating fish/seafood 1-3 times/month
- 11.1% reported eating locally caught fish
  
- 55.6% reported eating microwave popcorn
- 92.6% reported eating pizza from takeout/delivery

## *Take-home messages*

### **Northern Lake County has extensive environmental contamination**

- Air, soil, water
- Multiple types of contaminants
- At levels of concern for health

### **Community collaboration was critical in obtaining these data**

- Community concerns incorporated into study
- Open communication allows for response to ongoing events
- Data directly shared with community; facilitates action

**The need to continue, and expand this work is more critical than ever**

# *Thanks to our community partners!*

## **Community partners**

- Faith Farms
- Brown Faces Green Spaces
- Gary Advocates for Responsible Development
- Just Transitions Northwest Indiana
- Environmental Law & Policy Center
- Sojourner Truth House

## **NCLEP Community Advisory Board**

- Juan Andrade
- Joan Crist
- Dave Dabertin

- Tim DaSilva
- Susan Duncan
- Grace Folla
- Kimmie Gordon
- Frida Graves

## **NCLEP Community Ambassadors**

- Suzanne Chick
- Tim DaSilva
- Grade Folla
- A'kiyra Giles
- Allan Halline



Northern Lake County  
Environmental Partnership

# Acknowledgements

## **PFAS Team**

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- Gunnar Brown
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***https://hhs.purdue.edu/equityenvepi/***