#### Cancer Environment Forum 2022

## Introduction & Context

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### **Disparate Exposures**

How does the geographical spread of air pollution influence localized cancer risk?

### **Policy Interventions**

How is pollution managed and how are solutions advanced?

### Systems Thinking

## Air Pollution

## Integrating Environmental Chemicals into Cancer Prevention









Lake Superior

### Ottawa

Montreal

Toronto

hicago Betroit

Boston

New York Philadelphia

Washington

#### Cancer Risk - Total Risk > 100 75 - 100 50 - 75 25 - 50 6 - 25 Zero Pop Tracts

Atlanta

1.1

Lake

Huron

Miami

## Cancer risks in St. John the Baptist Parish, LA





Of the top 10 census tracts in counties with the highest cancer risks due to industrial air pollutants, 6 are in St John the Baptist in LA



#### Pollution Proximity Index (PPI)



#### Additional features





## Explore & Download Data



Provincetown

### **Cancer Rates Not Explained by Smoking: A County Level Analysis**

Myers et al, Environmental Health. 2020 and 2021

- After total smoking elimination, 5 counties would see only an approximate 8% reduction in their rates of smoking-related cancers, far less than the overall average of about 40%
  - Jefferson County KY (Louisville)
  - Wayne and Macomb counties MI (Detroit)
  - Campbell County KY (Cincinnati)
  - Jefferson Parish LA (New Orleans)
- Estimate of lung cancer reduction if smoking were eliminated in Allegheny County, PA
  - 11% versus average across the US of 62%



## Individual-level interventions

## **Population-level interventions**

Programs Institutional policy Public policy



### **Clean Air Act**

- NAAQS: 6 criteria pollutants, including particulate matter
- State Implementation Plans
- Industry-based New Source Performance Standards
- Auto emission standards
- National Emission Standards for Hazardous Air Pollutants (NESHAP)

### **Occupational Safety and Health Act**



H. 3336

Energy facility siting bill.

Review of the historic impacts of facilities on environmental justice populations, climate & public health

Proposed, in committee

# MA Clean Energy Plan

2030: 50% below 1990 emission levels.

2040: 75% below 1990 emission levels.

> 2050: Net zero emissions

## Toxics Use Reduction Act

Establishes 301 CMR 41.00: Toxic or Hazardous Substance List.

Large facilities report toxic chemical use, create roadmaps for reducing toxic use, and pay fees

## **S.** 9

An Act Creating a Next Generation of Roadmap for MA Climate Policy

Signed March 26, 2021

## Cancer risk from toxic chemicals: how can systems thinking help?

US chemicals policy does not require testing before marketing

Regulation remains weak

Minimal investment in understanding health impacts, and limited data



Public is confused/ accepts health problems as inevitable



Industry claims lack of scientific evidence; opposes regulation

> Scientific norms seek certainty in conclusions about risks

Some scientists and health professionals reinforce dominant narrative of small problem or "no proof"

# Appreciation











UNIVERSITY OF MASSACHUSETTS LOWELL







#### SILENT SPRING INSTITUTE

Researching the Environment and Women's Health



## **TODAY'S AGENDA**

#### Presenters

- Polly Hoppin, U. Mass. Lowell/Lowell Center for Sustainable Production
- David Christiani, Harvard Medical School/TH Chan School of Public Health
- Judy Ou, University of Utah
- Mary White, Centers for Disease Control and Prevention
- Roseann Bongiovanni, GreenRoots Chelsea

#### Panel

- -Gwen Collman, National Institute of Environmental Health Sciences - Narjust Duma, Brigham and Women's Hospital/Harvard Medical School - Ned Ketyer, Physicians for Social Responsibility
- Discussion