

National Environmental Public Health Tracking: Environmental Health Surveillance in the U.S.

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U.S. Centers for Disease Control and Prevention

EH Surveillance Meeting
Ottawa, Canada
2/25-26/2013

National Center for Environmental Health
Agency for Toxic Substances and Disease Registry



ENVIRONMENTAL HEALTH SURVEILLANCE IN THE U.S.

Environmental Health Surveillance

- ❑ Detect and monitor trends
- ❑ Generate hypotheses
- ❑ Guide action
- ❑ Inform policymaking
- ❑ Provide information to public
- ❑ Track progress



Environmental Health Surveillance

Agent is a hazard

Agent is present in environment

Route of exposure exists

Host is exposed to agent

Agent reaches target tissue

Agent produces adverse effect (cellular)

Adverse effect becomes clinically apparent

**Hazard
Surveillance**

**Exposure
Surveillance**

**Health Effects
Surveillance**

Thacker, et al, 1996

Environmental Health Surveillance

Environmental Regulatory Activities

Public Health Activities

- Hazard tracking
- Monitoring
- Permitting & enforcement
- Environmental fate & transport research

- Exposure tracking
- Hazard identification
- Toxicology
- Risk analysis
- Prevention

- Health outcome tracking
- Health studies
- Individual & population exposure assessment

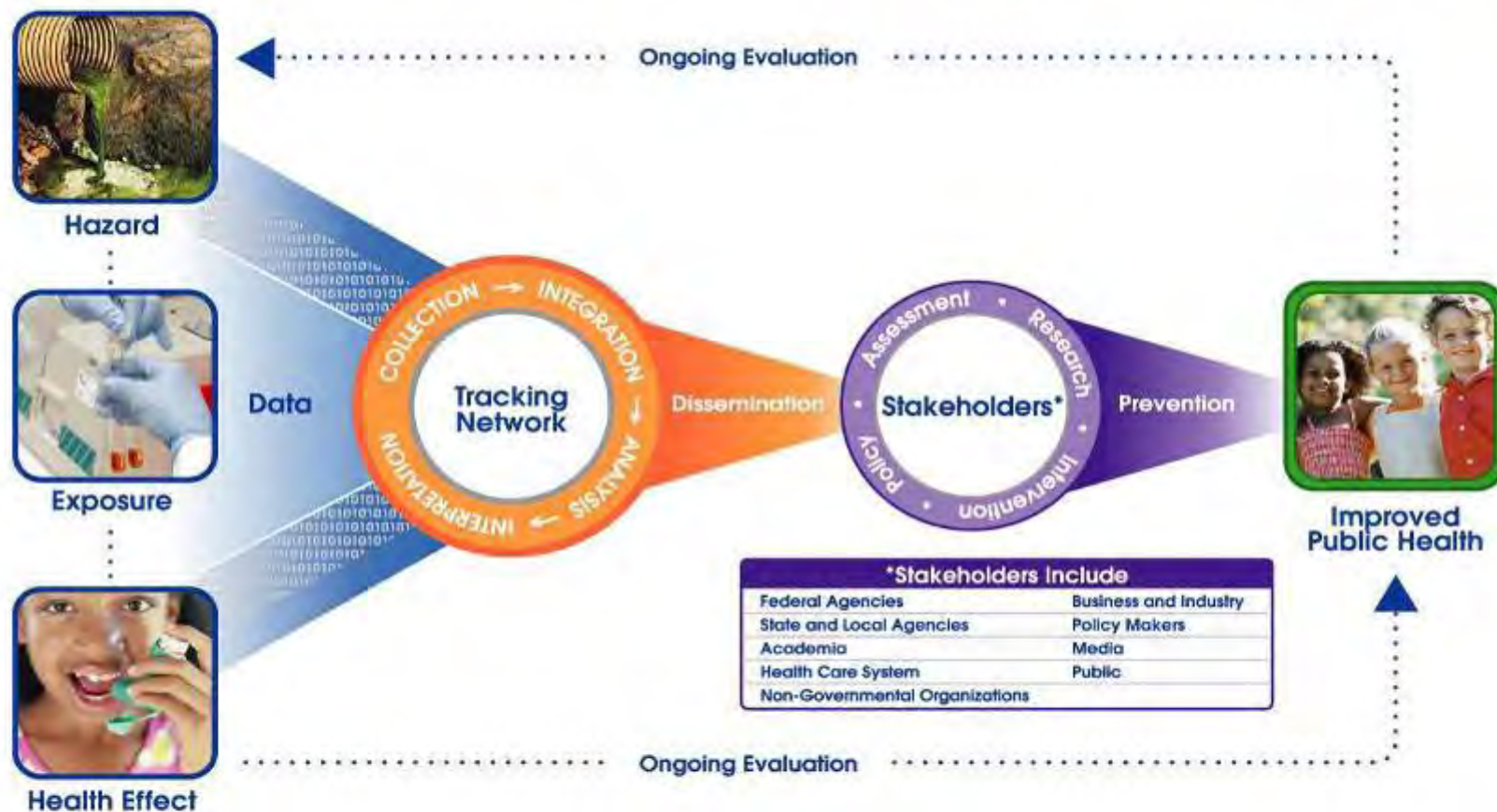
Pew Commission: Environmental Health Review, 2000

- Chronic conditions account for 4 out of every 5 deaths in the United States
- Little information is routinely collected on non-infectious disease
- Environmental monitoring conducted regulatory purposes
- Little human exposure data
- Answers needed about the role of the environment on health outcomes

Recommended a “Nationwide Health Tracking Network for diseases and exposures”

NATIONAL ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

ENVIRONMENTAL PUBLIC HEALTH TRACKING



*Stakeholders Include	
Federal Agencies	Business and Industry
State and Local Agencies	Policy Makers
Academia	Media
Health Care System	Public
Non-Governmental Organizations	



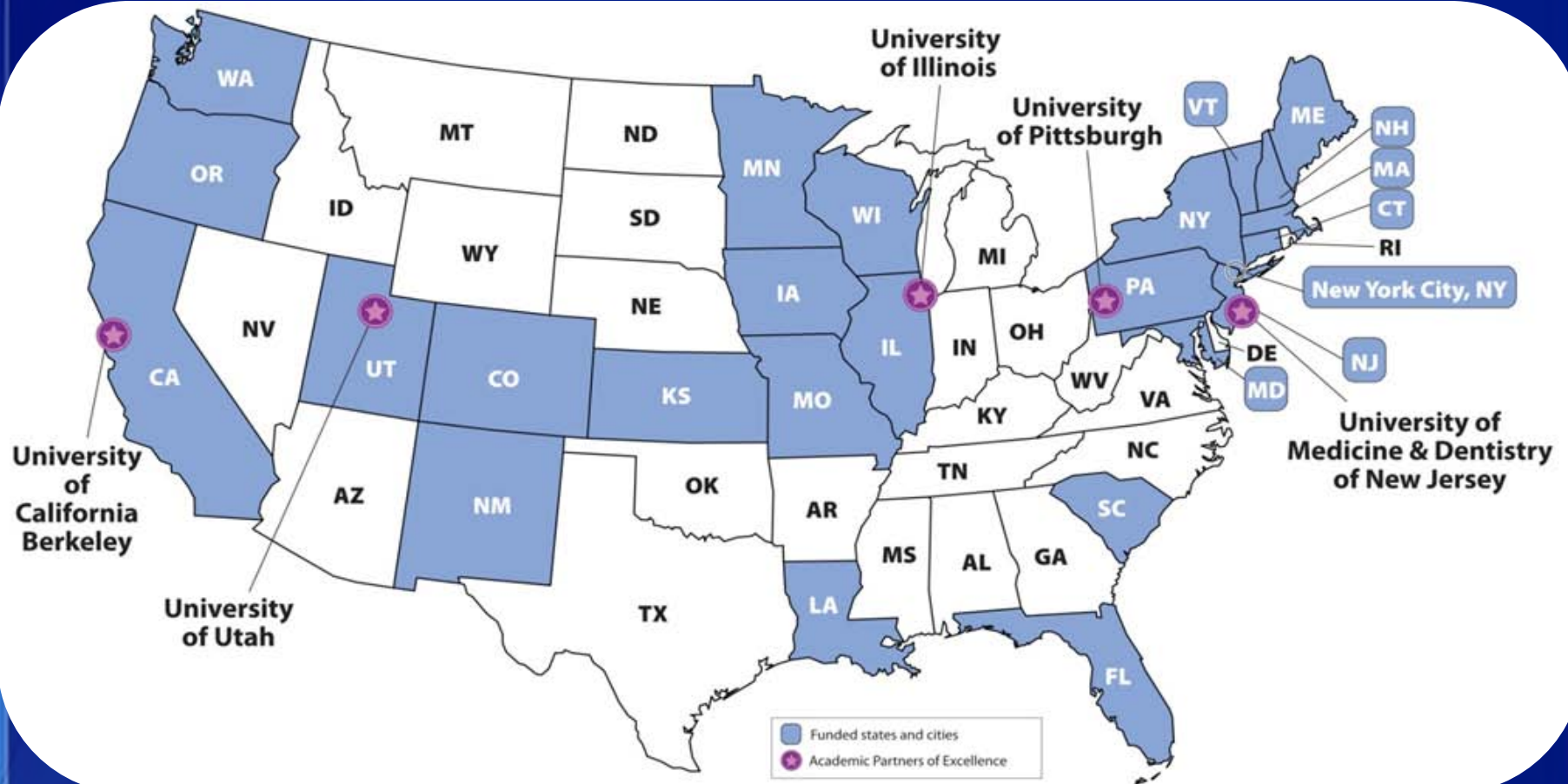
DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
SAFER • HEALTHIER • PEOPLE



Tracking Program Goals

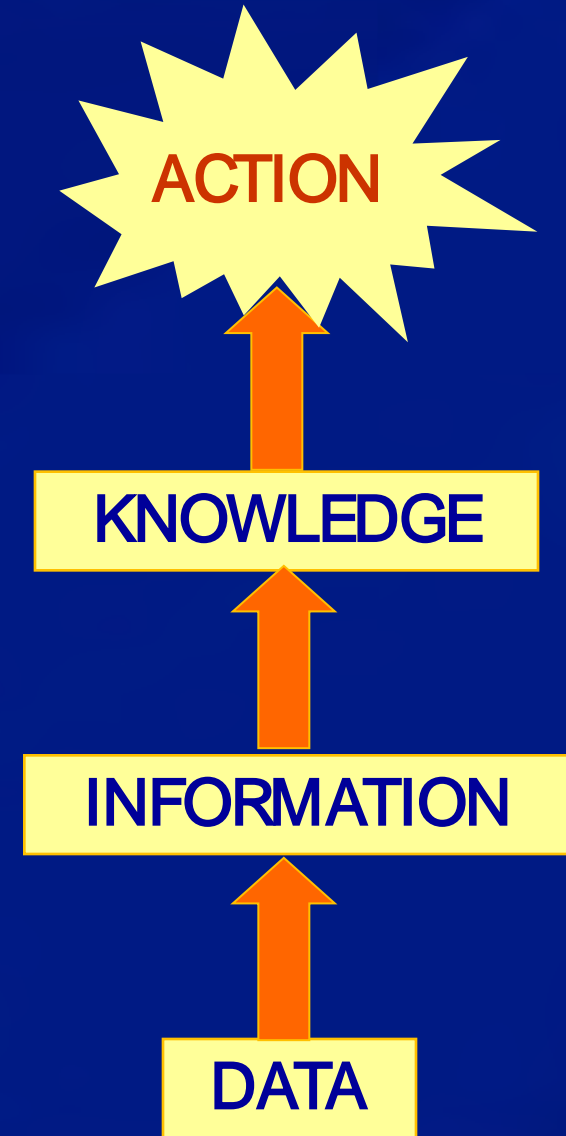
Goal 1	Build a Sustainable National Environmental Public Health Tracking Network
Goal 2	Advance Environmental Public Health Science and Research
Goal 3	Disseminate Information to Guide Policy, Practice, and Other Actions to Improve the Nation's Health
Goal 4	Enhance Environmental Public Health Tracking Workforce and Infrastructure
Goal 5	Foster Collaboration Among Health and Environmental Programs

CDC's Tracking Program



Tracking Program

- ❑ National Network
 - Public Portals
 - Secure Portals
 - Standardized Data
- ❑ Data Utilization
- ❑ Engage Partners
- ❑ Build Capacity



Data and Information

NATIONAL ENVIRONMENTAL PUBLIC HEALTH TRACKING NETWORK



National Environmental Public Health Tracking Network

May is **Asthma and Allergy Awareness Month**

[Click to Learn More >>>](#)



← 1/4 →

The National Environmental Public Health Tracking Network is a system of data that tracks environmental hazards and health outcomes across the nation.

On the tables

- climate change
- the health of the environment
- the area where you live

[Learn more about the Tracking Network](#)

[Explore Tracking Data](#)

National Public Portal

- 20 datasets
- 2.2 GB of data
- 18.7 million rows of data
- 270 measures

[CDC on Facebook](#)

[CDC on Twitter](#)

Environments



- Climate Change
- Outdoor Air
- Water
- More

Health Effects



- Asthma
- Cancer
- Childhood Lead Poisoning
- More Health Conditions

Population Data



- Population Characteristics
- Biomonitoring: Population Exposures

Info by Location



Select State:

Select

GO

Tracking Hot Topics

Drinking Water Week- May 6-12th

CDC releases new biomonitoring module

Evaluation of a Heat Vulnerability Index on Abnormally Hot Days

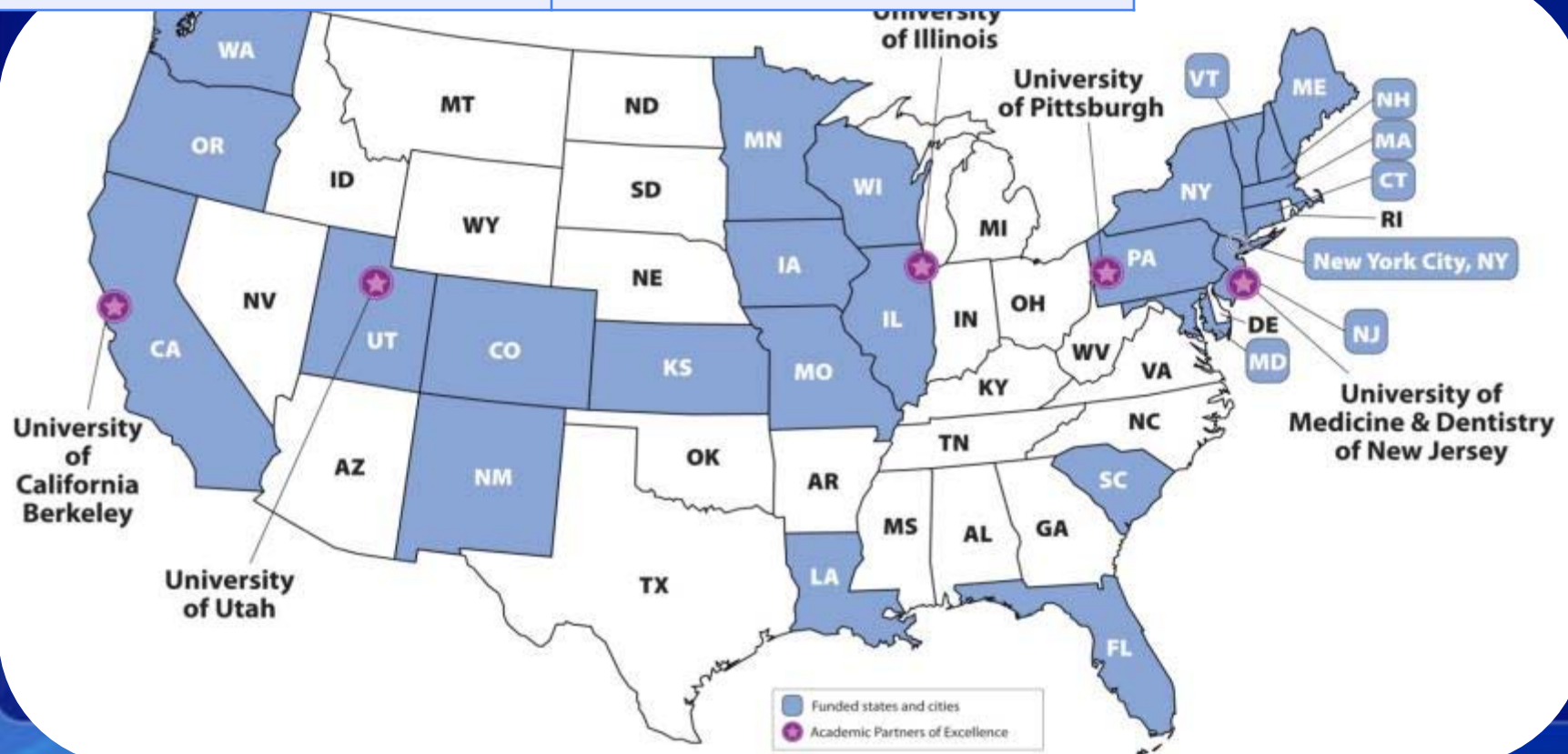
Tox Town: info on toxic chemicals where you live, work, & play

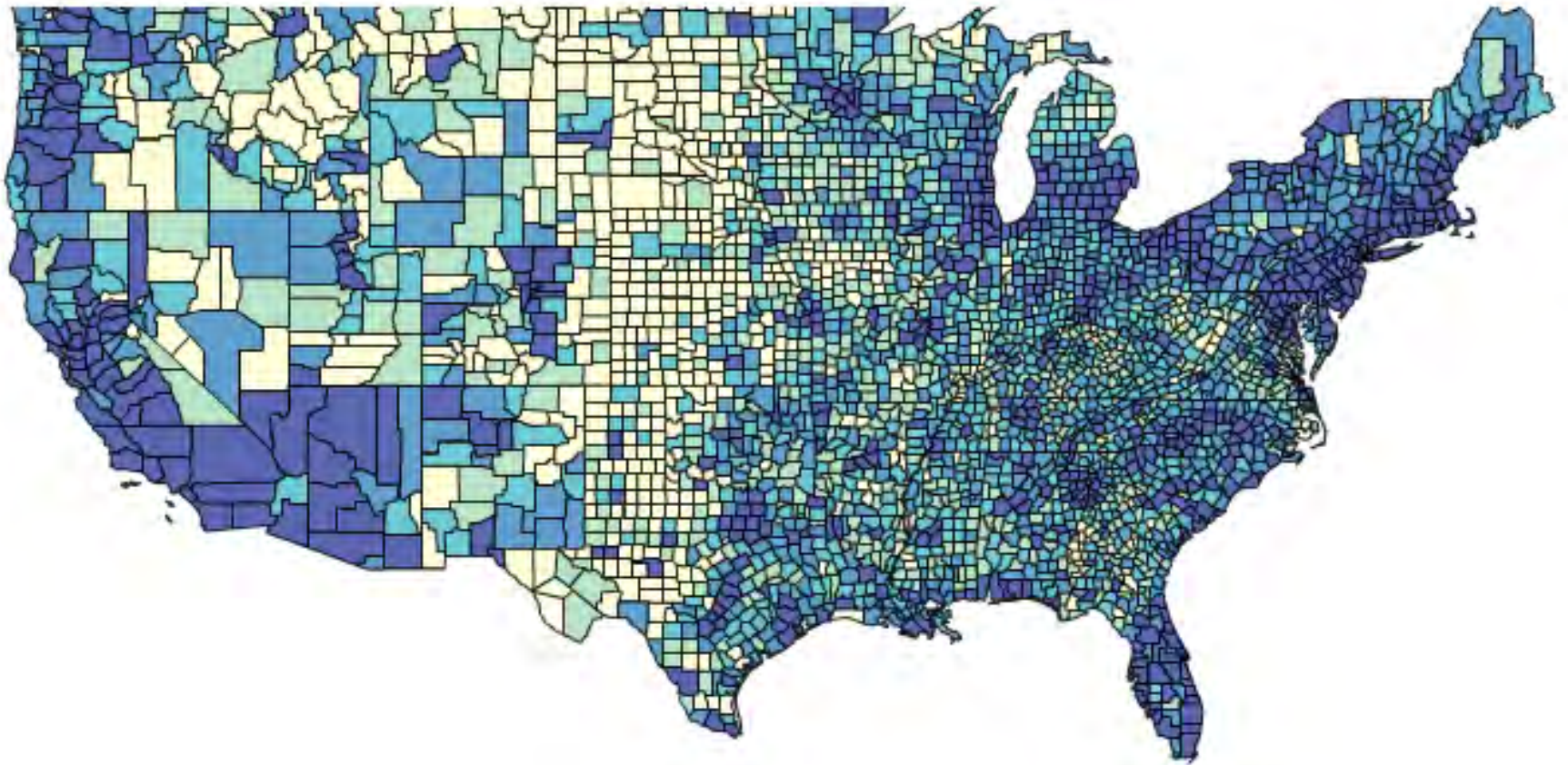
View our Tracking Success Stories to learn how Tracking is making a difference across the U.S.

[View our guide to building an Environmental Public Health Tracking Network](#)

Total Coverage	165 million (55%)
Asian	9.6 million (70%)
Black	18.5 million (48%)
Hispanic	28 million (61%)
Native American	1.4 million (48%)
Other	2.8 million (57%)
White	132 million (55%)

Total Coverage of US Population by Tracking Program





**62% (167) measures cover more
than Tracking states and city**

Content and Data

- ❑ Asthma
- ❑ Birth Defects
- ❑ Cancer
- ❑ CO Poisoning
- ❑ Childhood Lead
- ❑ Developmental Disabilities
- ❑ Heart Attacks
- ❑ Reproductive Birth Outcomes
- ❑ Biomonitoring
- ❑ Climate Change
- ❑ Community Design
- ❑ Homes
- ❑ Outdoor Air
- ❑ Population Characteristics
- ❑ Water

Layers of Information

CDC Home
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People. Saving Money Through Prevention.

Tracking A-Z Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Glossary A-Z CDC A-Z Tracking A-Z

National Environmental Public Health Tracking Network

New and Improved Data Query and Results Panel!

The National Environmental Public Health Tracking Network (Tracking Network) is a system of integrated health, exposure, and hazard information and data from a variety of national, state, and city sources.

On the Tracking Network, you can view maps, tables, and charts with data about:

- chemicals and other substances found in

Quick Links

- Home
- About Tracking Program
- State & Local Tracking Portals
- Indicators & Data
- Secure Portal

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Glossary A-Z CDC A-Z Tracking A-Z

Health Effects

Environments

Population Data

There is a gap in information about how the environment affects chronic diseases like

Quick Links

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Glossary A-Z CDC A-Z Tracking A-Z

Heart Attacks

Tracking Heart Attacks

Related Links

Search Heart Attack Data

A heart attack is also called a myocardial infarction. It occurs when the blood supply to the heart is interrupted. The resulting blood or oxygen shortage can lead to the death of heart tissue. As of 2008, about 1 in 5 people aged 20 and older have survived a heart attack.

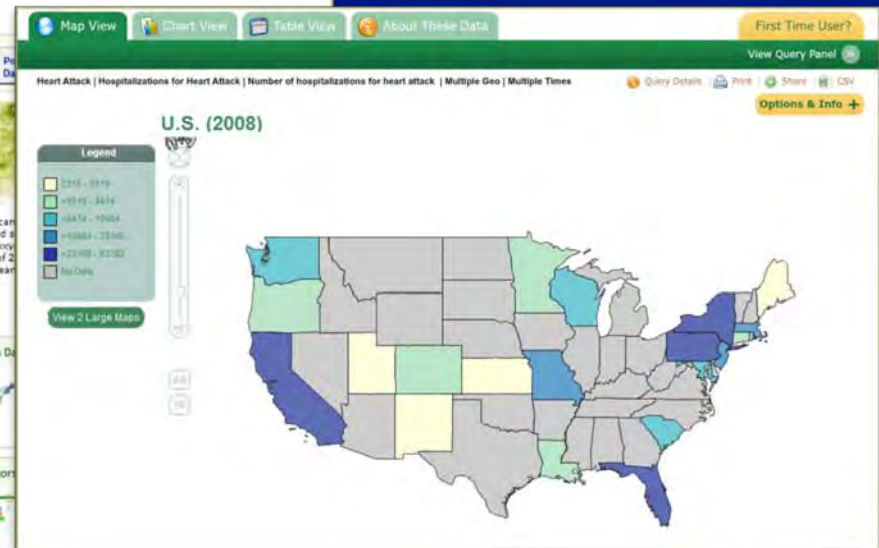
Tracking Heart Attacks

Learn how these data are collected and how they are being used on the Tracking Network.

Related Links

Explore other resources for more information.

Indicators



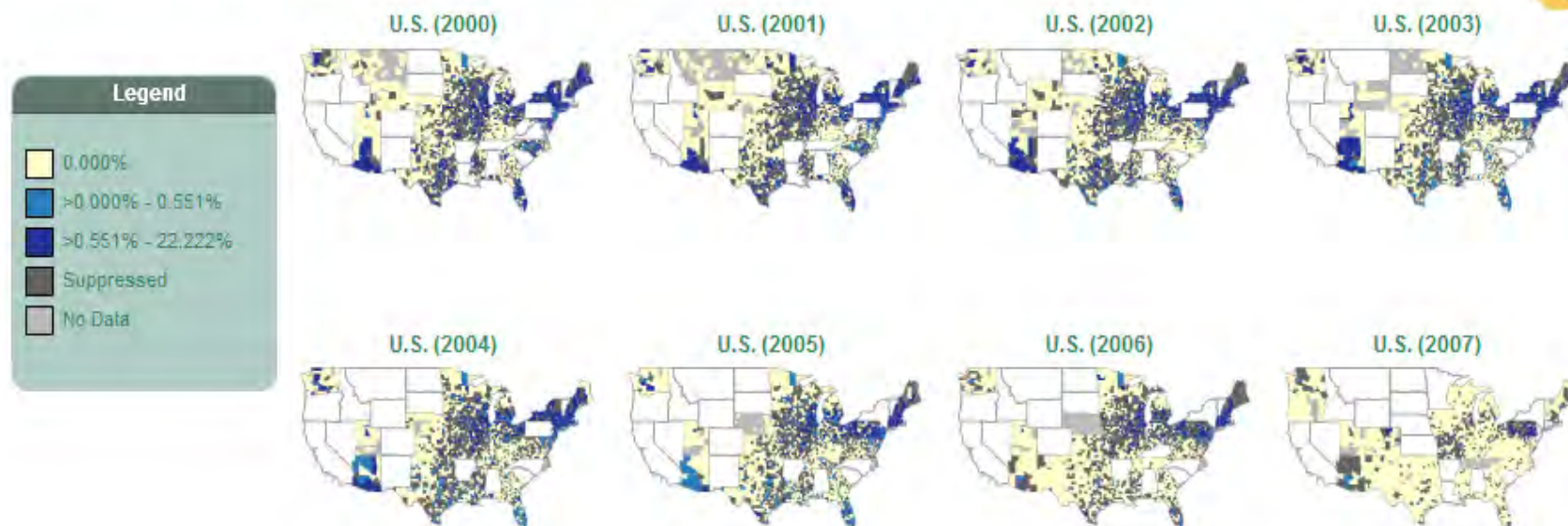
Addressing Gaps in Data and Methods

BEYOND THE NETWORK OF GATEWAYS AND PORTALS

Childhood Lead Poisoning | Blood Lead Levels by Birth Cohort | Percent of children born in the same year and tested before age 3 with confirmed elevated blood lead levels | Multiple Geo | Multiple Times

Query Details Print Share CSV

Options & Info +



Percent of children tested with confirmed elevated blood lead levels, by birth cohort



MEASURES	4
COUNTIES	2736 (87%)
YEARS	8
VARIABLE	BLL category

Childhood Lead Poisoning

□ Data and information

- Developing measures to address new reference value
- Evaluating impact of program cut on future data availability
- With grantees

□ Knowledge

- Ecological and case control study of ambient air levels and childhood blood lead levels
- Evaluating the impact of data aggregation on results
- With UPITT

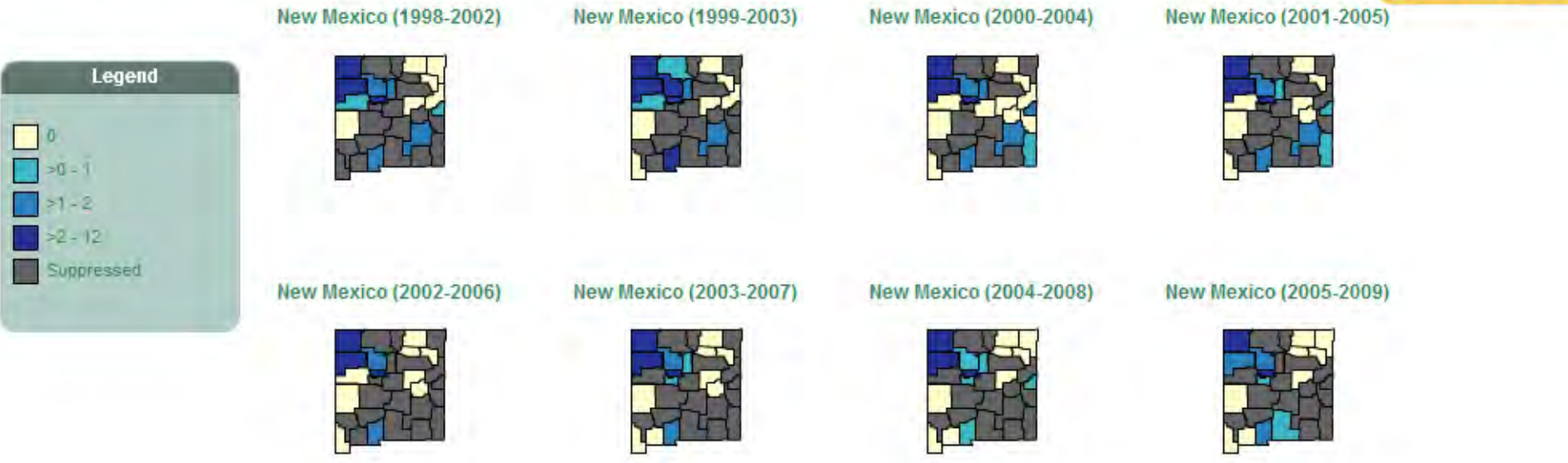
Addressing Childhood Lead Poisoning Risk in Missouri

- ❑ Many children living in St. Louis have elevated blood lead levels
- ❑ Tracking Program looked at relationship between building demolitions and BLLs of children living nearby
- ❑ Children exposed to multiple demolitions showed a rise in BLLs
- ❑ Demolition site work practices revised and inspections increased

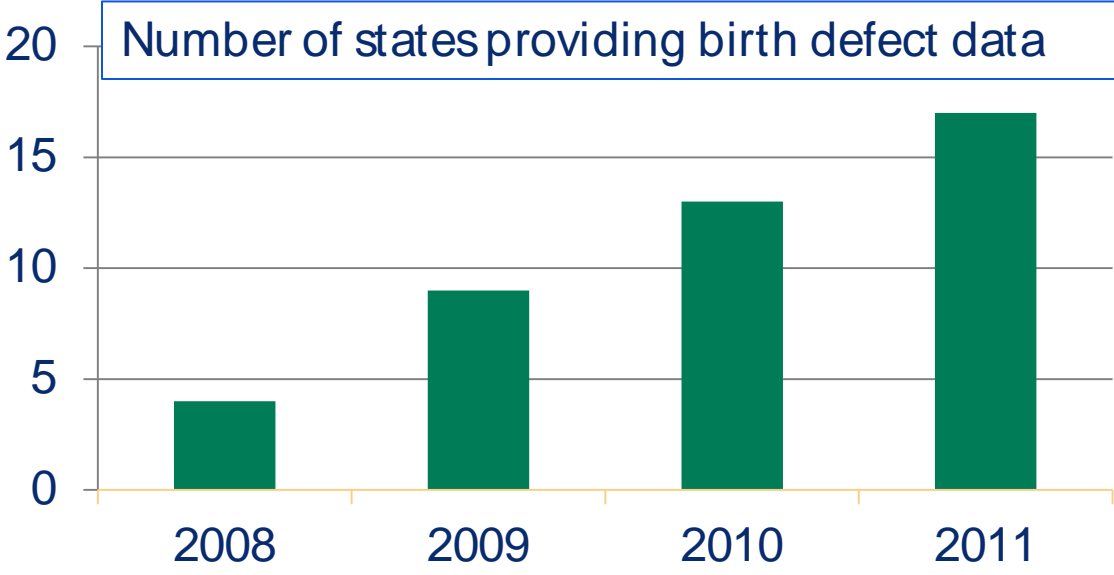
The logo for the Missouri Environmental Health Tracking Program is located in the bottom right corner. It features a light green rectangular background. On the left, the words "Missouri Environmental Health Tracking Program" are written in a white, sans-serif font, stacked in four lines. To the right of the text is a white silhouette of the state of Missouri.

Missouri
Environmental
Health Tracking
Program

Average annual number of Cleft Lip with or without Cleft Palate among live births



MEASURES	26
DEFECTS	12
VARIABLE	Age, Race, Ethnicity, Infant Sex



Birth Defects and Birth Outcomes

□ Knowledge

- Evaluating the association between cleft defects and PM2.5
- Determining how to use data collected from different types of systems
- With birth defects program

□ Knowledge

- Evaluating the association of PM2.5 and low birth weight and premature births
- Internally and with UMDNJ

□ Data

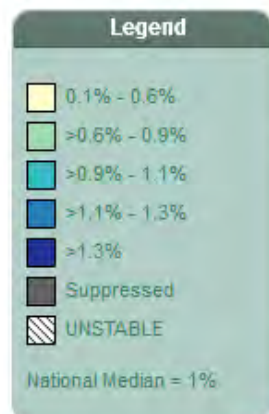
- Evaluating data and methods for tracking infertility
- With grantees

Identifying Preterm Birth Rates in California

- ❑ Preterm birth linked to mother's exposure to air pollutants and lead
- ❑ Tracking Network identified preterm birth trends
- ❑ Fresno County used trends to target activities related to childhood lead poisoning, air quality and asthma

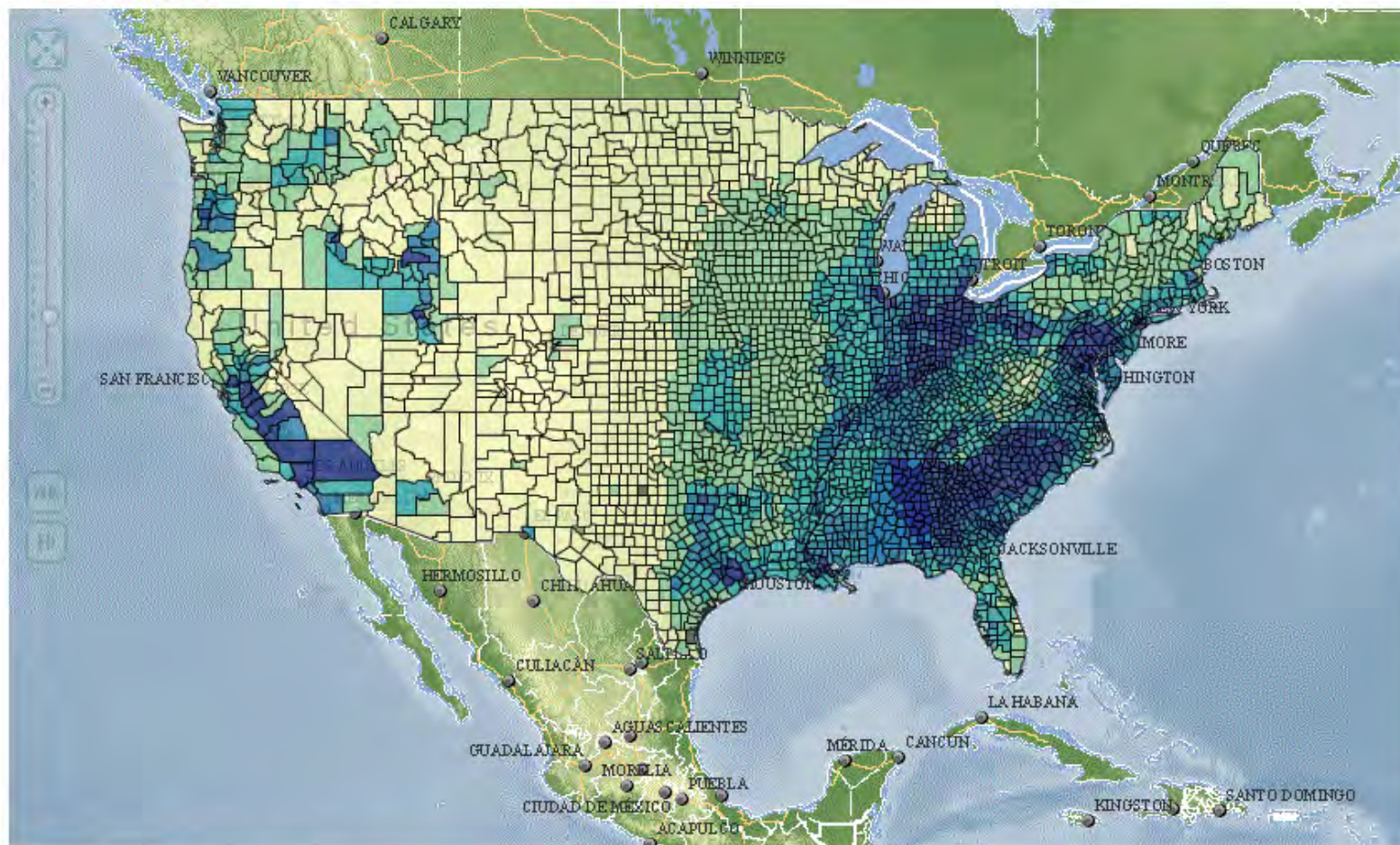


Estimated percent change in death rate from baseline associated with 20% reduction in air pollution



View 2 Large Maps

Switch to Tile View



U.S. (2004)

U.S. (2005)

U.S. (2006)

Click and drag thumbnail map image below for magnified view



Impact of Air Pollution on Health

□ Information

- Adding specific causes of death to benefits indicator

□ Data

- Switching to a new air model for PM2.5 and Ozone

□ Knowledge

- Two studies evaluating PM2.5 and cardiovascular health
- With UPITT and UCB

□ Knowledge

- Collaborating with EPA and other CDC on accountability assessments of new regulations

Reducing Asthma Hospital Stays in New York City

- ❑ Increase in childhood asthma hospital stays and ED visits
- ❑ Data used to urge update of asthma management plans for school start
- ❑ Decreasing rates of asthma hospital stays
- ❑ Advisories now standard practice

New York City
Environmental
Health Tracking
Program

Informing City Planning in California

- ❑ Tracking Program developed a tool for city planners to use to screen for air pollutants from high-traffic roads
- ❑ Planning Department uses tool to assess environmental risks before approving projects in city planning



* Step 1: Select Your Content ?

Climate Change ▼

Extreme Heat Days and Events ▼

Number of extreme heat events ▼

☐ Show only data about children

trackingsupport@cdc.gov

* Step 2: Choose Geography & Time ?

▼ ☒ All Counties ▲▶ ☒ Alabama▶ ☒ Arizona▶ ☒ Arkansas▶ ☒ California▶ ☒ Colorado▶ ☒ Connecticut▶ ☒ Delaware☒ Show Counties

Clear Geography

▼ ☒ All Available Years ▲☒ 2000☐ 2001☐ 2002☐ 2003☐ 2004☐ 2005☐ 2006☐ 2007

Clear Time

Step 3: Advanced Options ?

▼ Advanced Options (Required) ▲

▼ Heat Metric

☒ Daily Maximum Temperature☐ Daily Heat Index

▶ Minimum Duration Days

▼ Advanced Options (Select One)

▶ Absolute Threshold

▶ Relative Threshold

Clear Options

* Step 4: Submit ?

Run Query

WARNING: Due to the large size of data to be returned, this query could take a few minutes to complete.

Climate Change | Extreme Heat Days and Events | Number of extreme heat events | Multiple Geo | 2000 | Heat Metric: Daily Maximum Temperature, Minimum Duration Days: 2 days | Relative Threshold: 90th Percentile

Climate Change and Natural Disasters

❑ Data and Information

- Evaluating definitions for extreme heat events & heat-related mortality
- With grantees & CDC

❑ Data and Information

- Expanding module
- Connecting with planners and responders
- Evaluating emergency data feed

❑ Knowledge

- Updated MMWR on 10 years of heat-related mortality



Reducing Effects of Extreme Heat in California

- ❑ Cooling centers costly, but can be life-saving
- ❑ San Jose city leaders needed proof of health impacts of heat before approving cooling centers
- ❑ Tracking identified increase of heat-related ER visits during heat events
- ❑ City leaders approved cooling centers to open



Activities Ahead

- ❑ Use data to drive multi-state or national action
- ❑ Use innovative informatics for interaction and dissemination of these data
- ❑ Put data in the hands of people who need it



Thank you HStrosnider@cdc.gov

- <http://ephtracking.cdc.gov>
- Tracking List-serv:
epht@cdc.gov
- Facebook: CDC National
Environmental Public Health
Tracking Network
- Twitter: @CDC_EPHTracking



The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the Agency for Toxic Substances and Disease Registry