

# Environmental Public Health at the Centers for Disease Control and Prevention (CDC)



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National Center for Environmental Health

Centers for Disease Control and Prevention

NASA Health and Air Quality Applications Program Review

Newport News, RI

September 19, 2012

# CDC's Vision for the 21st Century: *"Health Protection...Health Equity"*

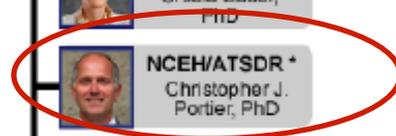
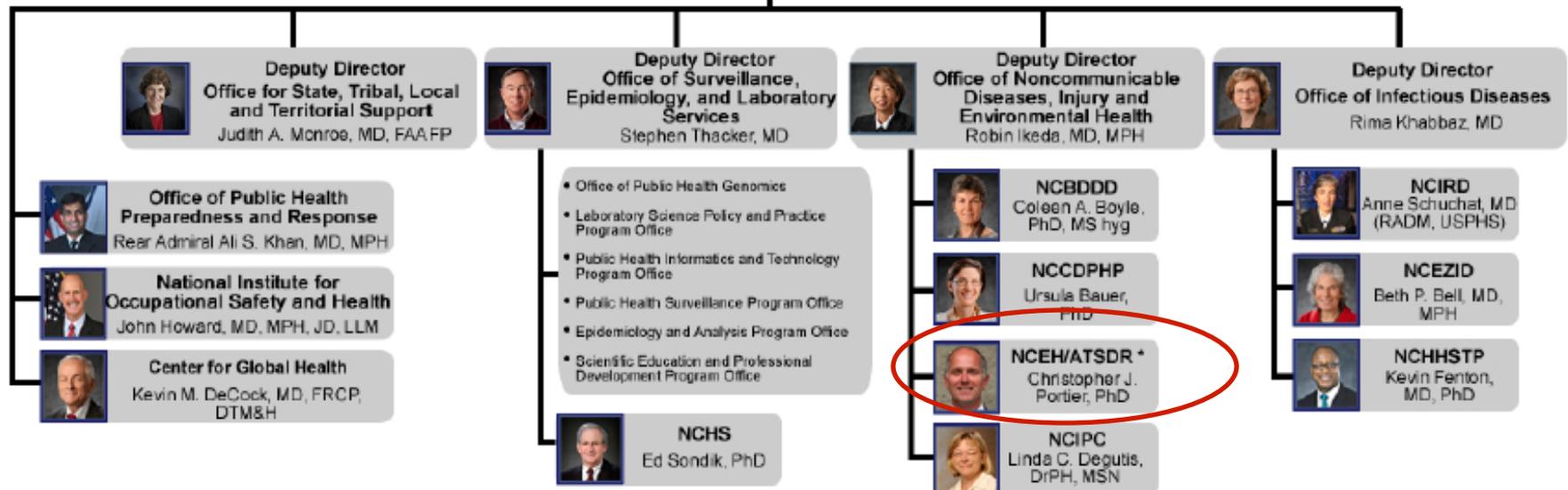
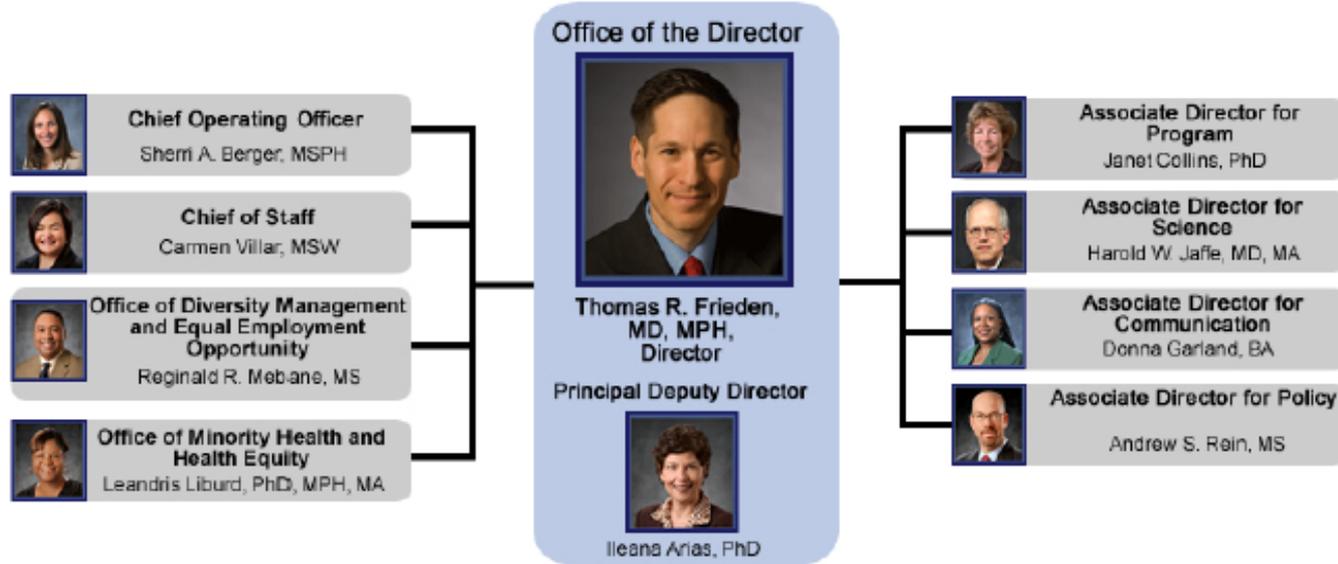


1946: malaria control



2012: Prevention & control of infectious and chronic diseases, injuries, workplace hazards, disabilities, and environmental health threats

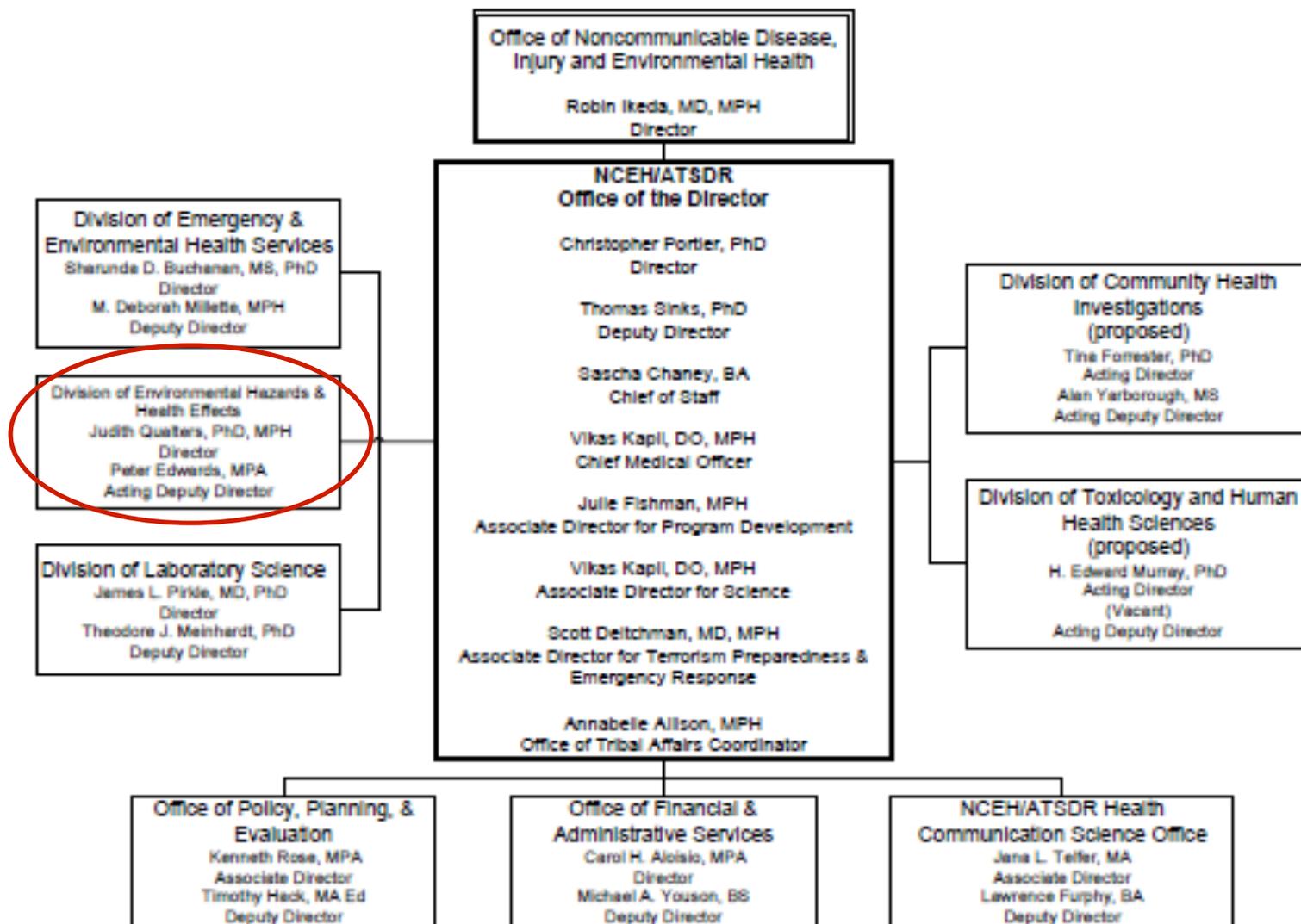
# Centers for Disease Control and Prevention





# National Center for Environmental Health

## Agency for Toxic Substances and Disease Registry



# EPH Concerns



Safe Water



Safe Food

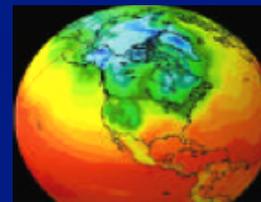
Healthy Communities



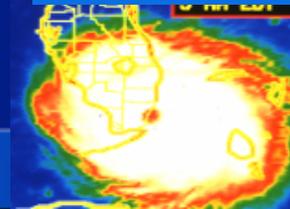
Healthy Homes



Safe Air



Climate and Health

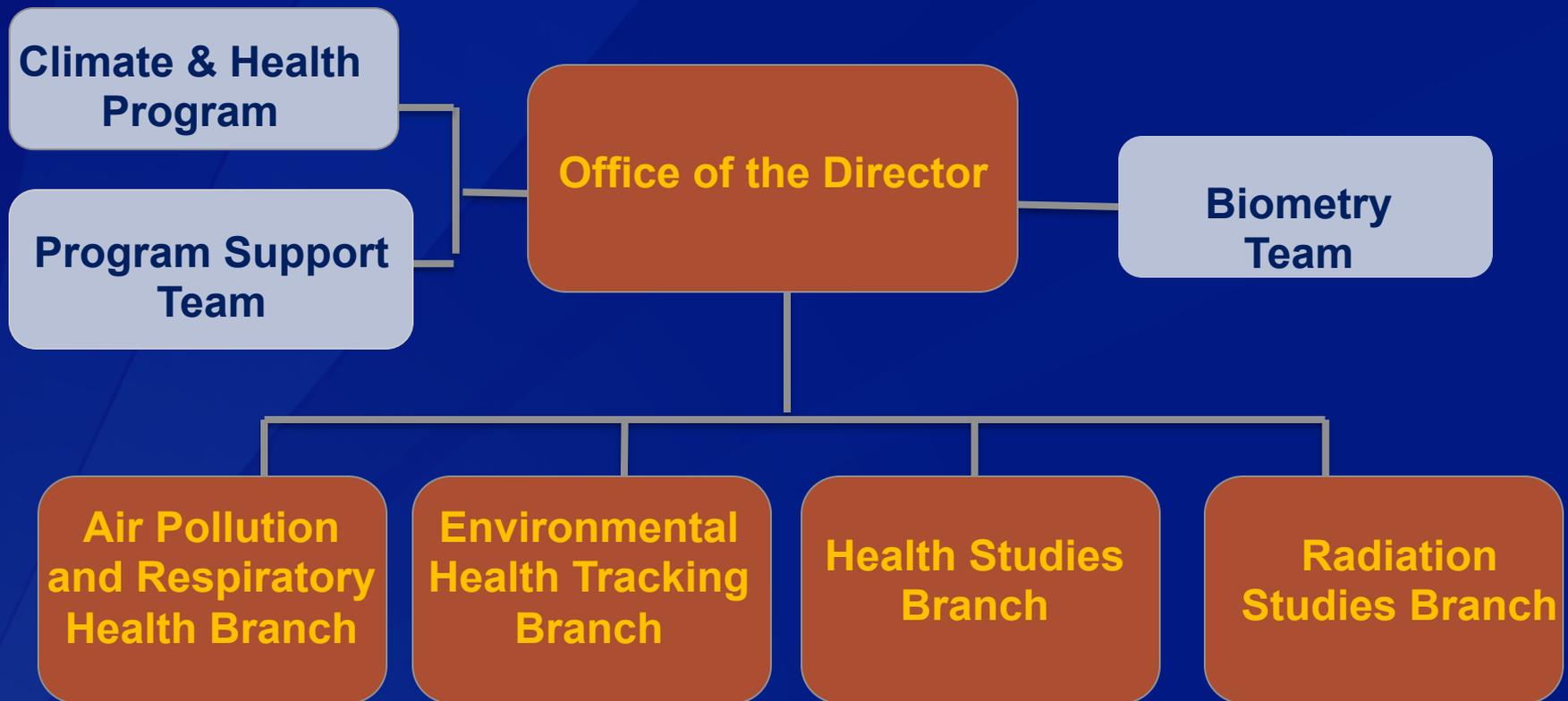


Proper Waste Management



# Division of Environmental Hazards and Health Effects

- *Mission: Through surveillance and investigations, gathers knowledge about human health and the environment to develop programs and policies aimed at preventing disease*



# Addressing Health and Environment

- Track
- Prevent
- Respond
- Research

## Radiation and Your Health

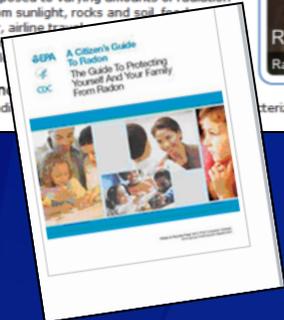
There are many sources of radiation exposure, including natural as well as manmade. For example, people are exposed to varying amounts of radiation from sunlight, rocks and soil, from air, airline travel, and...



Radiation Emergencies

Radiation Emergencies

Characterized in two forms—ionizing and non-ionizing



**MMWR**

**Heat-Related Deaths**  
Heat-related illnesses can occur when high ambient temperatures overcome the body's natural ability to dissipate heat ...[more](#)

**Aflatoxicosis in Kenya**  
Aflatoxin is a fungal toxin that contaminates maize and other types of crops during production, harvest, storage or processing ...[more](#)

**Chemical Emergencies**  
Specific chemical agents, information for professionals and general public ...[more](#)

# Radiation Studies

- ❑ Dose reconstruction
- ❑ Radiation public health research
- ❑ Radiation emergency preparedness
  - Fukushima
- ❑ Diagnostic radiation

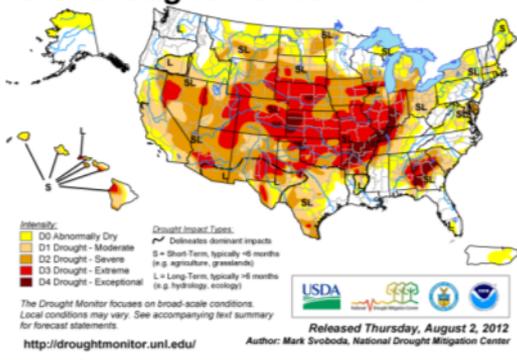


# Climate and Health

## Drought Spreads Pain From Florida to Arizona



### U.S. Drought Monitor July 31, 2012



### CDC: 2,636 cases of West Nile virus so far in record 2012

By Michelle Castillo Topics News

(CBS News) Reported cases of West Nile Virus and deaths caused by the disease continue to rise, the Centers for Disease Control and Prevention (CDC) said during a press conference on Tuesday.

Forty-eight states have reported cases of West Nile infection in people, birds and mosquitoes, with Alaska and Hawaii the only exceptions. As of Sept. 11, there have been 2,636 cases of West Nile virus disease in people this year, including 118 deaths. Of these, 1,405 (53 percent) were classified as neuroinvasive or brain-related.

## Heat wave adds to misery of storms, power outages in East

Millions of people lose power. Four states and the District of Columbia declare emergencies.

July 02, 2012 | By Matt Pearce and Melanie Mason, Los Angeles Times

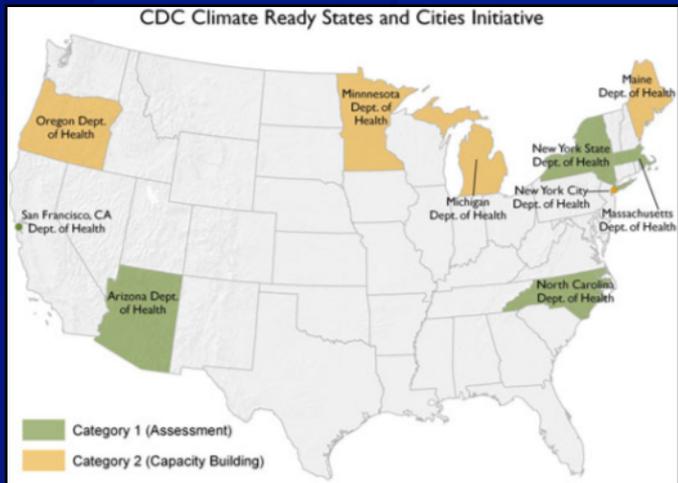
WASHINGTON — Utility crews struggled to restore electricity across several Eastern states Sunday as a withering heat wave heightened the misery inflicted by last week's violent storms.

"But unlike a polite hurricane that gives you three days of warning, this storm gave us all of the impact of a hurricane without any of the warning of a hurricane," Maryland Gov. Martin O'Malley told CNN's "State of the Union."

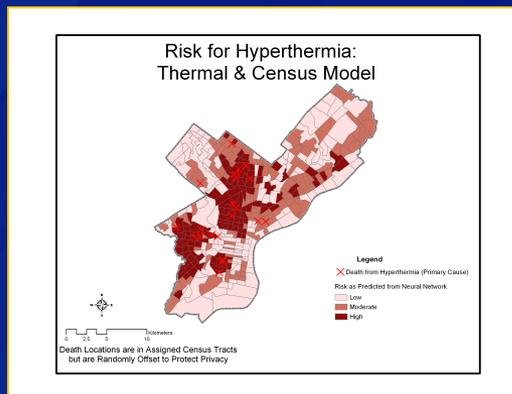
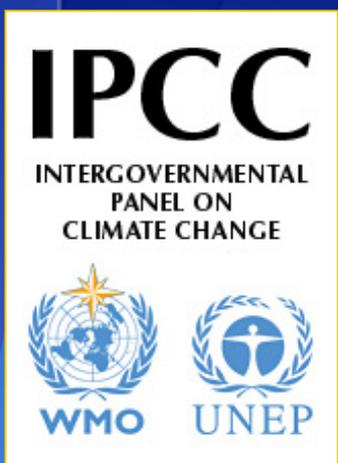


A crew clears a fallen tree in Washington, A heat wave is adding to the misery... (Brendan Smialowski,

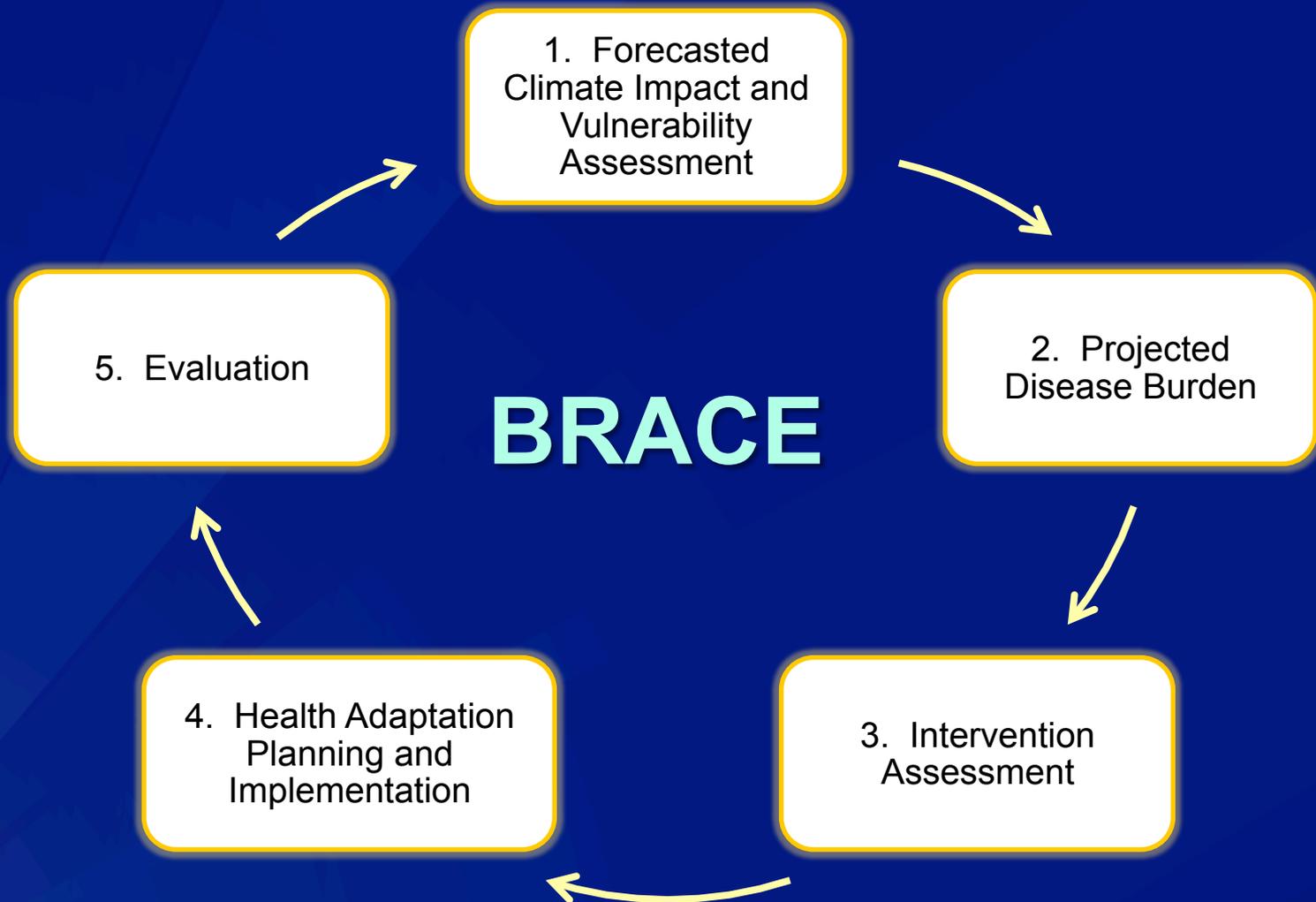
# Climate and Health Program: Priority Health Actions



- ❑ Enhance the science base
- ❑ Translate climate science into public health tools
- ❑ Provide public health leadership
- ❑ Support Adaptation Planning:
  - Funds 8 state and 2 local health depts in Climate Ready States and Cities Initiative
  - Funds 9 states for Building Resilience Against Climate Effects

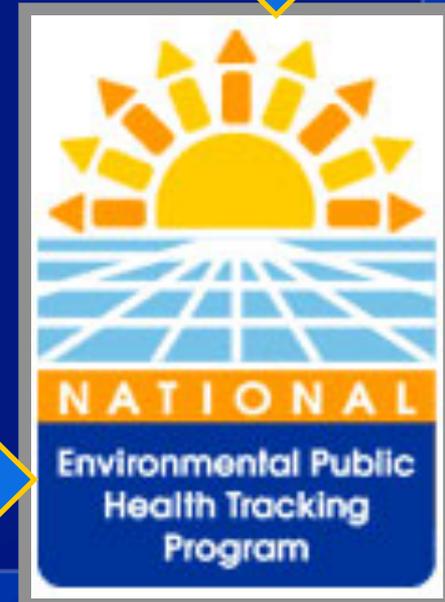


# The BRACE Framework



# Priority health actions (cont'd)

- ❑ Track data on environmental conditions, disease risks, and disease occurrence related to climate change.
- ❑ Identify locations and population groups at greatest risk for specific health threats, such as heat waves.





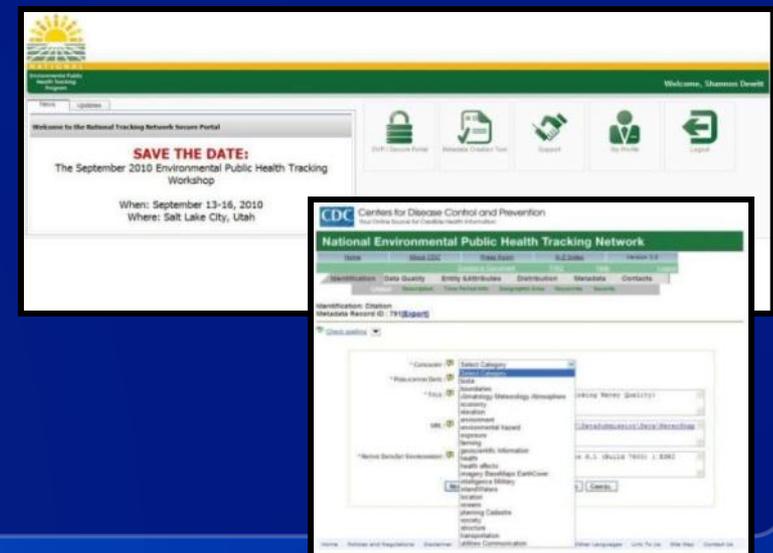
# Public Portal

- One-stop access to health and environmental information



# Secure Portal

- “Sandbox” for turning data into information






SEARCH

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



← 1/4 →

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 the environment
- some chronic diseases and conditions
- the area where you live

[Learn more about the Tracking Network](#)

[Explore Tracking Data](#)

### Quick Links

- Home
- About Tracking Program
- State & Local Tracking Portals
- Indicators & Data
- Secure Portal
- Print page
- Bookmark and share
- CDC on Facebook
- CDC on Twitter

### 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

### 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



- Quick Links**
- Climate Change and Health
  - Climate Change Monitoring in the U.S.
  - Extreme Heat

- Quick Links**
- Home
  - About Tracking Program
  - State & Local Tracking Portals
  - Success Stories
  - Indicators & Data
  - Secure Portal
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  - CDC on Twitter

- Tracking Success Stories**
- California
  - Minnesota
  - New York City

**Indicators Available on the Tracking Network**

Click on an indicator to read more about it.  
 CDC's Tracking Network uses data from many sources to track the effects of climate change. While there are a number of indicators related to climate change, the Tracking Network is focusing on extreme heat to better evaluate the number of heat-related deaths at the national level, while allowing for comparisons across states. These comparisons can help local communities design interventions and better understand the possible health effects and risks to specific groups of people.

The following three indicators combine weather and health data to identify patterns in extreme heat and their associated health effects. These indicators use data from the past to identify extreme temperatures, deaths that might be related to heat, and conditions that make people vulnerable to heat.

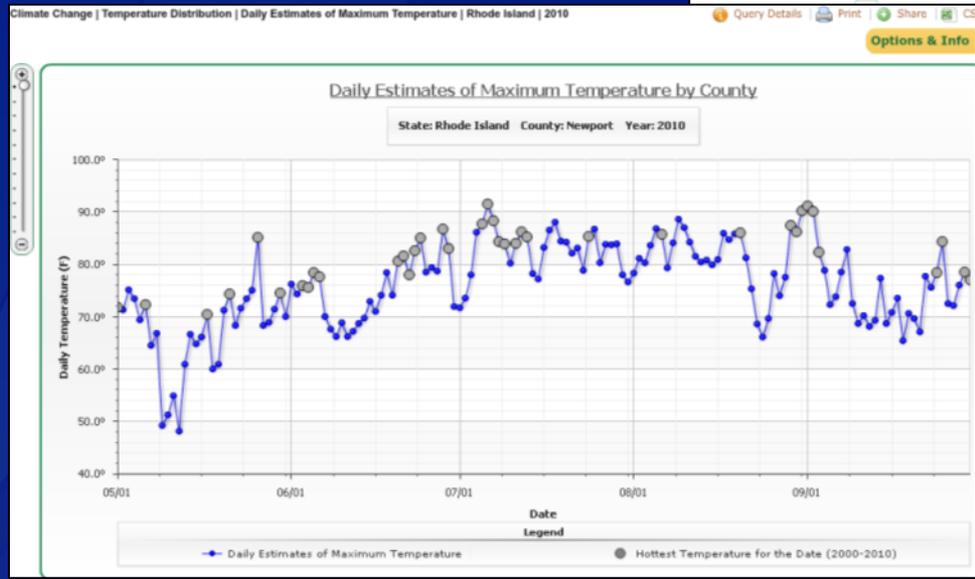
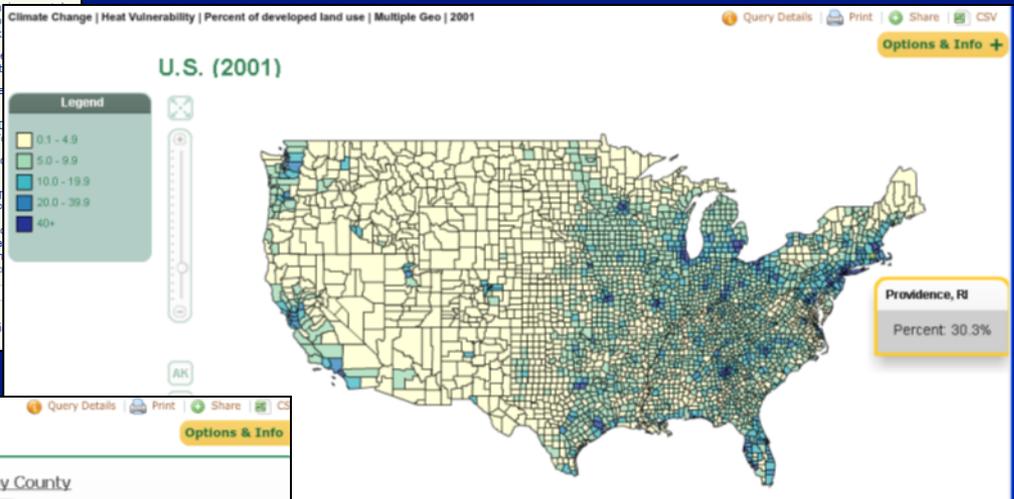
**Heat Vulnerabilities** - This indicator includes measures that may make people at greater risk for heat-related health effects. These measures are diabetes, heart disease, poverty, race, advanced age, social isolation, disabilities, population density, forest canopy, developed land use, and cultivated crop land use.

**Heat-Related Mortality** - This indicator is based on data from death certificates to evaluate deaths that have identified heat as an underlying or contributing cause.

**Temperature Distribution** - This indicator allows you to look at daily temperature and heat index using modeled data by county during May-September of each year.

- Tracking Hot Topics**
- Children's Environmental Health Network of good work
  - Check out the on child health
  - Get info to keep healthy
  - Check out CDC Heat Media T
  - Test Your Knowledge Hurricanes
  - Check out AT Substances H
  - View our Tracking Stories to learn Tracking is making difference ac
- Resources**
- Communicati

# Climate Change Module



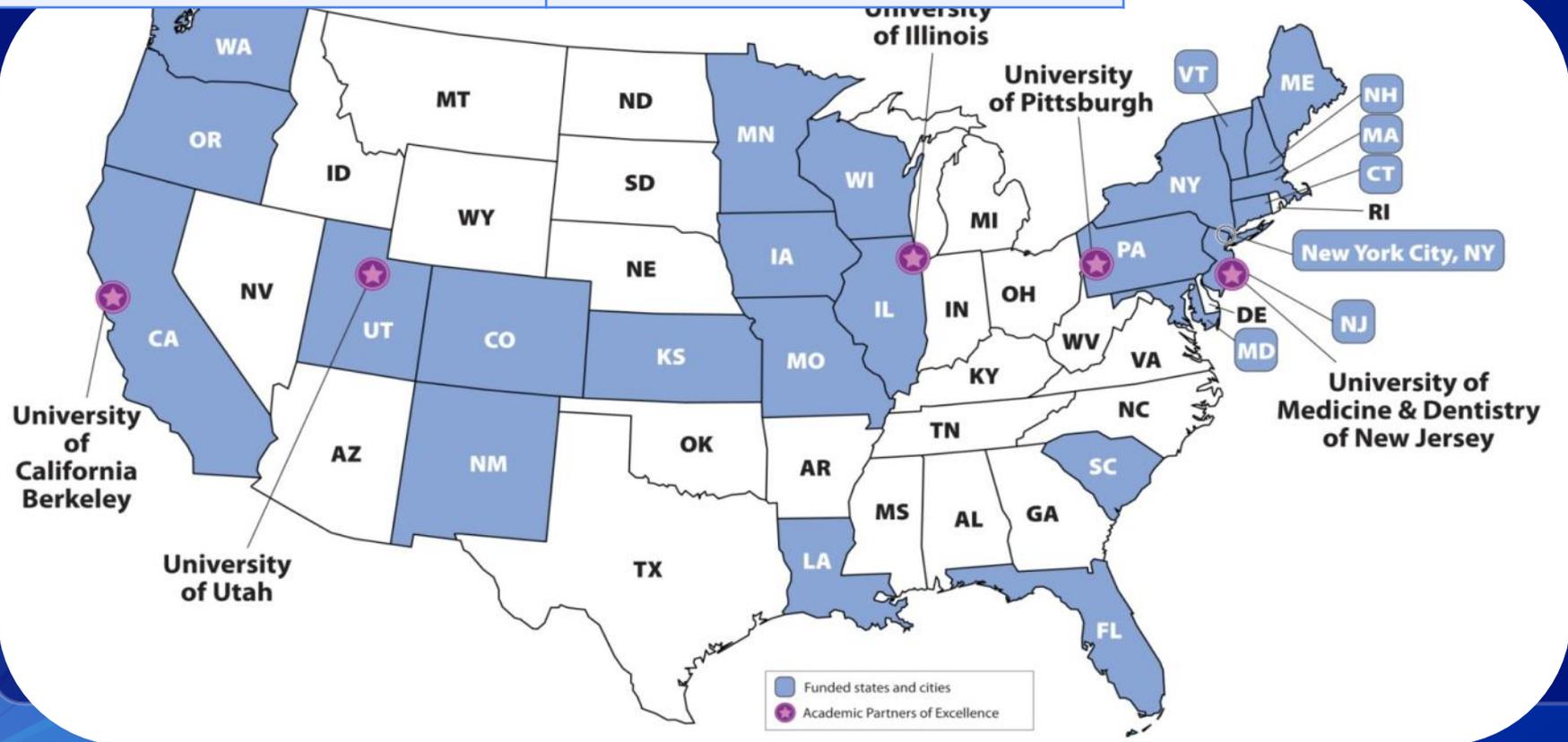
# Growing Over Time

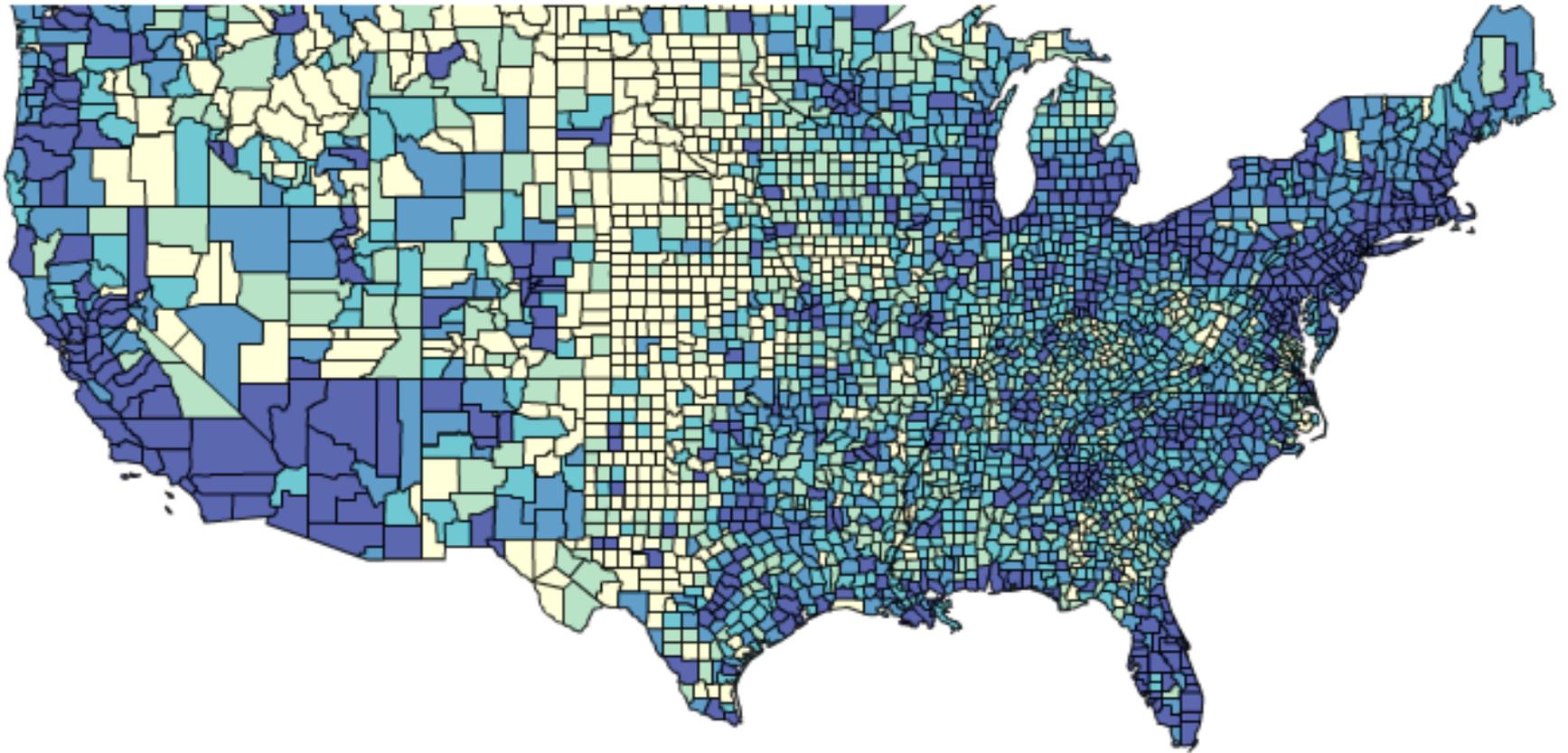


- ❑ State / local networks & capacity
- ❑ Topics / data
- ❑ Functions
- ❑ Use / impact

<b>Total Coverage</b>	<b>165 million (55%)</b>
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%)

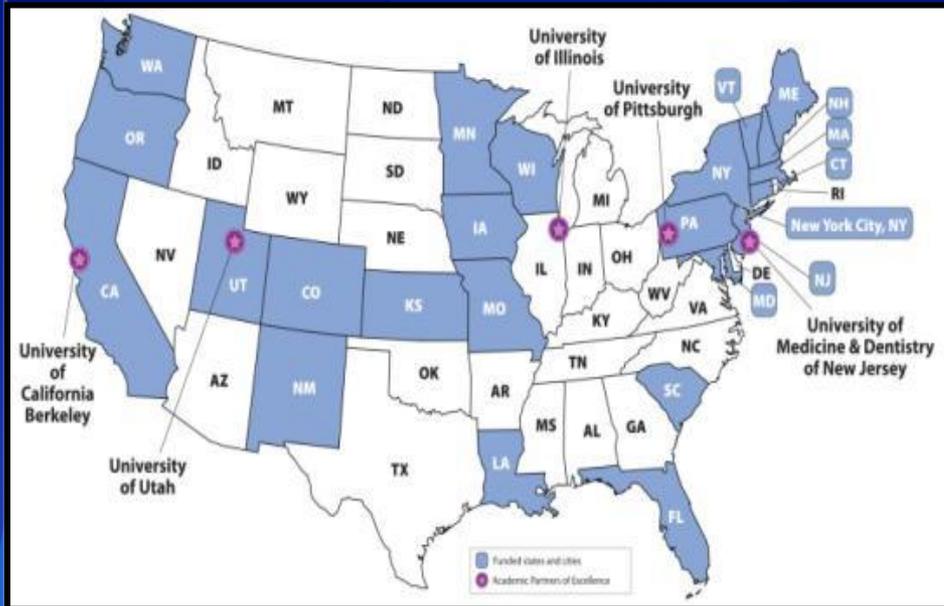
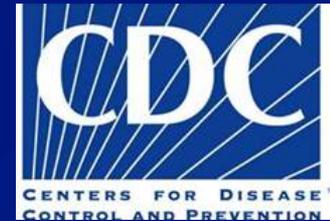
# Total Coverage of US Population by Tracking Program



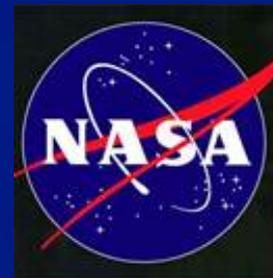


**60% (156) measures cover  
more than Tracking states and  
city**

# Data Sources



National Cancer Institute



# New Data Over the Next Year

<b>SUMMER 2012</b>	<b>FALL 2012</b>
<ul style="list-style-type: none"><li>• Children's Environmental Health</li></ul>	<ul style="list-style-type: none"><li>• Annual Blood Lead Levels in Children</li><li>• BRFSS Smoking Prevalence</li><li>• Extreme Heat Events</li></ul>
<ul style="list-style-type: none"><li>• Drinking Water - Atrazine, DEHP, PCE, TCE, Radium, Uranium</li><li>• Asthma ED visits</li><li>• Heat ED visits and hospitalizations</li></ul>	<ul style="list-style-type: none"><li>• Pesticide exposures reported to poison control centers</li><li>• Chemical Incidents from ATSDR's National Toxic Substance Incidents Program</li><li>• USGS Well Water</li></ul>
<b>WINTER 2013</b>	<b>SPRING 2013</b>

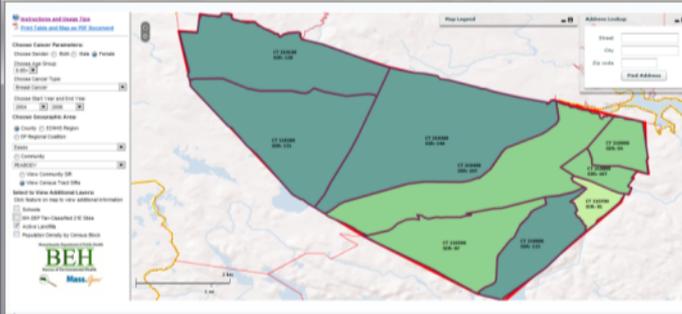
# Being Evaluated



- ❑ Air toxics
- ❑ Ischemic heart disease mortality benefits associated w/ reducing PM2.5
- ❑ Mortality associated with extreme heat events
- ❑ Addt'l cardio and resp hospitalizations, ED visits, & mortality
- ❑ Temporal & spatial patterns in pollen
- ❑ Radon in homes
- ❑ Private well water
- ❑ Occupational health
- ❑ ALS (from ATSDR registry)
- ❑ Vulnerability measures
- ❑ Pesticide residue in food
- ❑ New modeled air
- ❑ Intellectual disabilities from ADDM
- ❑ BLL 5 to <10
- ❑ USGS soil
- ❑ Precipitation
- ❑ PM speciation and source

# Tools for Analysis and Reporting

## Massachusetts SIR calculator



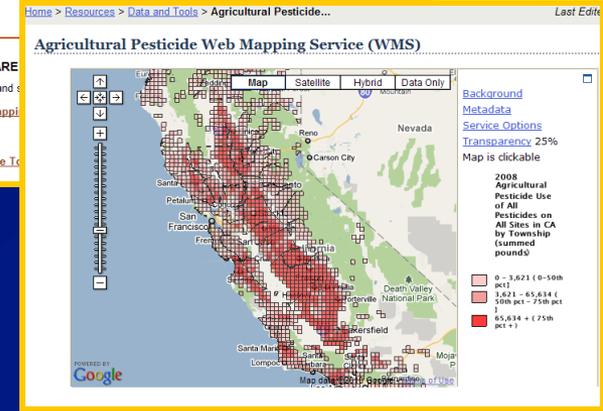
**CEHTP Tools and Services**

The tools and services developed by CEHTP are an essential component in our ability to provide more useful data and information to the public. CEHTP tools and services are available to all users, though many have been developed with the particular goal of assisting research. However, the visualization and mapping tools in particular are likely to be of interest to users who want to explore what is happening in their community.

**WHAT TOOLS AND SERVICES ARE AVAILABLE?**

- Click below to find out about the tools and services available:
- ➔ [Agricultural Pesticide Web Mapping Service](#)
- ➔ [Geocoding Tool](#)
- ➔ [Traffic Volume Spatial Linkage Tool](#)

## California suite of tools



## Wisconsin community profile

Washington County Environmental Health Profile, October 2010

**Carcinogenic Emissions**

Carcinogenic emissions are chemicals in the air that are known to cause or promote cancer. The exact impact of environmental pollutants on cancer is unknown, but it is believed approximately 10% of all cancers are related to environmental factors. In Wisconsin, industries report their annual emissions data to the Wisconsin Department of Natural Resources. These data are further submitted to the US Environmental Protection Agency where they are used in modeling programs to estimate health risks. The emission data presented here are based on models that estimate pollution concentration in outdoor air from industries' annual reports. If you would like specific information about emissions in an area, contact your regional Department of Natural Resources at <http://dnr.wis.gov/rca/enr/ServiceCenter/SSByRegion.html>. The population data are from the 2000 U.S. Census. The emission concentration data are from the 1999 NATA (National-Scale Air Toxics Assessment) from the U.S. EPA <http://epa.gov/ttn/atna/1999/tables.html>.

**Percent of the population in the county in each lifetime cancer risk category, 1999**

County	Wisconsin							
	<1million		1 to <10million		10 to <100million		>=100million	
Lifetime Cancer Risk	Total Concentration	% Pop	Total Concentration	% Pop	Total Concentration	% Pop	Total Concentration	% Pop
Acrylonitrile	0.000209	100.0%						
Arsenic compounds	0.000016	100.0%						
Asbestos	0.000000	100.0%						
Benzene			0.755714	100.0%				
Benzidine	0.000000	100.0%						
Beryllium compounds	0.000003	100.0%						
Bis(chloromethyl)ether	0.000000	100.0%						
Cadmium compounds	0.000026	100.0%						

## Rapid Inquiry Facility



## Utah Examples



## Weber & Davis County contaminated groundwater plumes

## New York Env'tl Facilities and Cancer Mapping

New York State State Agencies

**Department of Health**  
Information for a Healthy New York

You are Here: [Home Page](#) > [Cancer Data and Statistics](#) > Environmental Facilities and Cancer Mapping

**Environmental Facilities and Cancer Mapping**

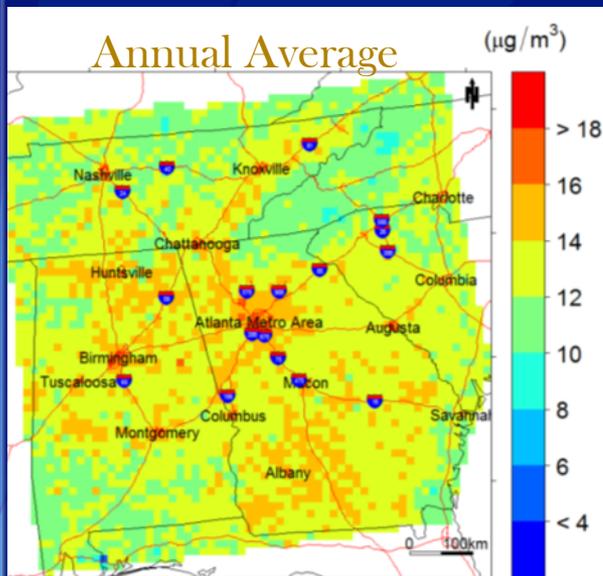
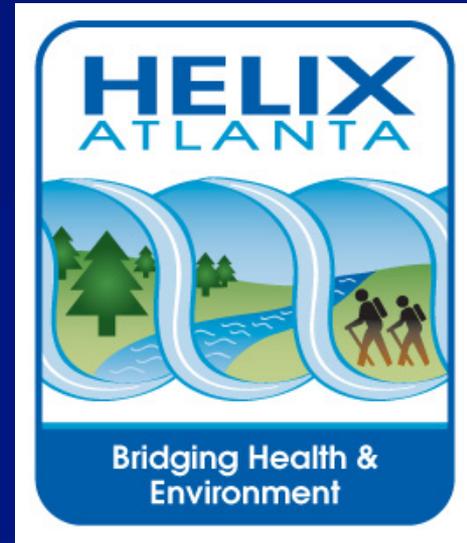
**Important Information**

The Environmental Facilities and Cancer Map shows the number of people diagnosed with cancer (cancer counts) for the years 2003-2007 in small geographic areas of New York State. Locations of certain environmental facilities can also be viewed. These maps **cannot** show that an environmental facility causes cancer in a community for a variety of reasons.

Are you not taking into account...

# Collaboration with NASA

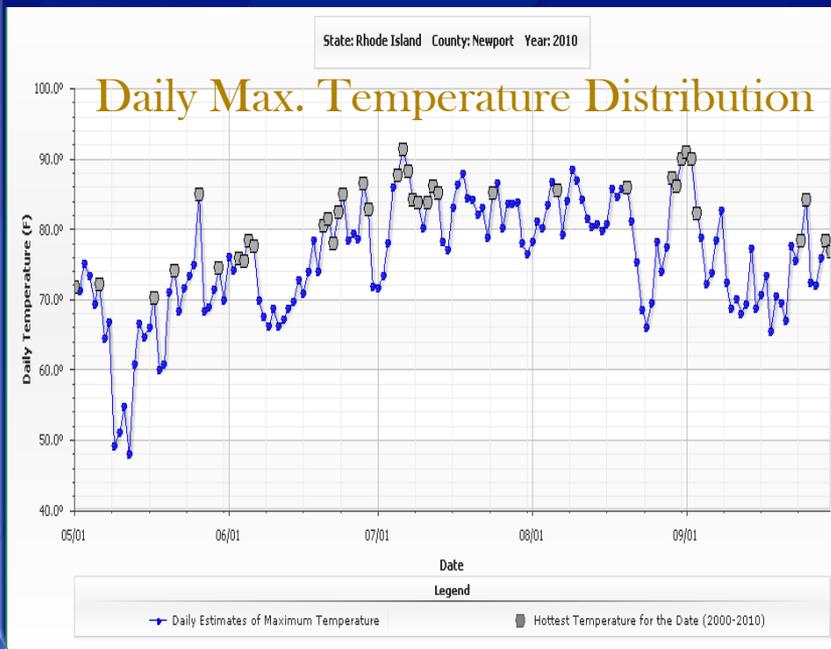
- Started in 2005 with a linkage project, HELIX- Atlanta
  - Used Aerosol Optical Depth (AOD) to predict  $PM_{2.5}$  concentrations in the Metropolitan Atlanta area



- Working with NASA and Emory University on enhancing spatial coverage of  $PM_{2.5}$  in the Southeast
  - AOD-based  $PM_{2.5}$  estimates will be available on the Tracking Network

# Collaboration with NASA

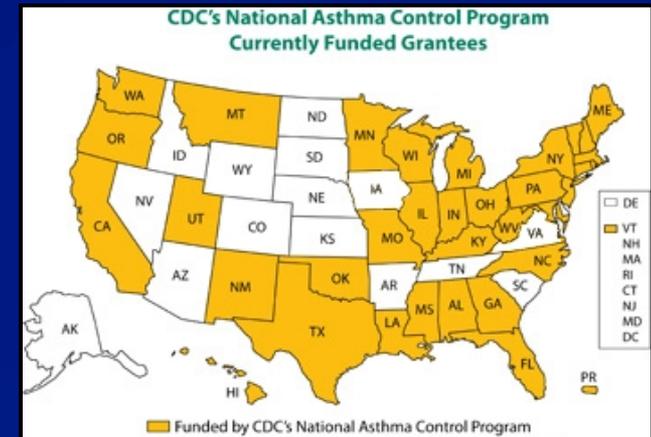
- Indicators of Extreme Heat Surveillance
  - County-level measures of extreme heat using North American Land Data Assimilation System (NLDAS) on the Tracking Network
  - County-level data available from the Tracking Network



- Future work includes:
  - Heat event identification tool
  - Measures of precipitation and drought

# Air Pollution & Respiratory Health Branch

- ❑ National Asthma Control Program
  - 34 states, D.C., Puerto Rico
- ❑ Asthma surveillance
- ❑ Air pollution
- ❑ CO poisoning surveillance & prevention



# The Good News on Asthma

*Trends indicate improved asthma control*

- ❑ 1.7 million fewer people had asthma attacks
- ❑ 1,400 fewer people died
- ❑ \$3.96 billion were saved in hospital bills because 233,000 fewer hospitalizations occurred due to asthma in 2008



*CDC has been working with states for over 10 years on asthma, impacting the above trends.*

# Researching and Responding: Air Pollution & Health Impact

- ❑ Atlanta Commuter Study
- ❑ Children's Health After the Storm
- ❑ California Port Study
- ❑ Volcanic emissions in HI
- ❑ Wildfires



# Health Studies Branch



- ❑ **Understanding Chemical Exposure**
- ❑ **Clean Water for Health**
  - **Unregulated Drinking Water Initiative**
- ❑ **Disaster Preparedness & Response**

# Cancer Clusters

## ❑ Past work

- Fallon

## ❑ Current work

- **Revise CSTE Guidelines**
- **Develop communication toolkit for public health professionals**
- **Technical assistance to states**
  - Upon request
  - Review methods and protocols

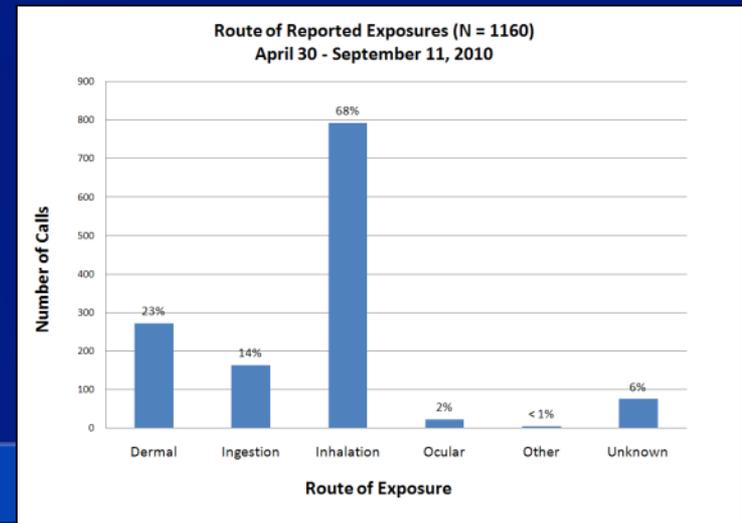
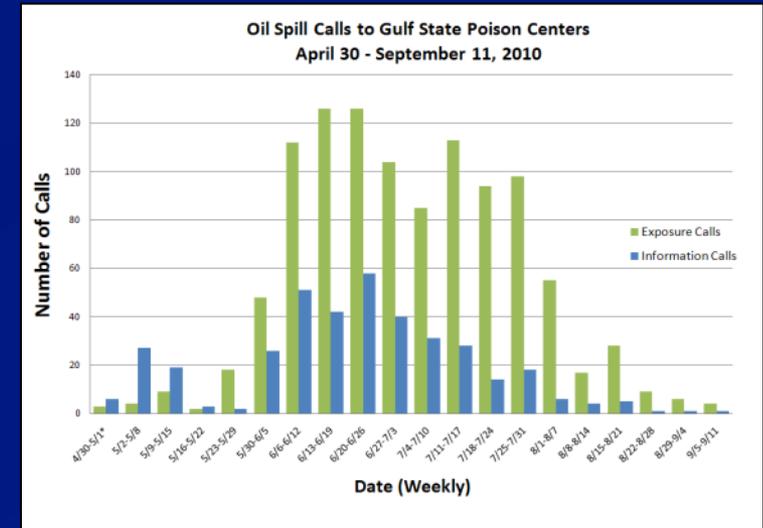
# Private Well Initiative for Environmental Surveillance and Public Health (PWI)

- ❑ No comprehensive public health program to ensure the safety of unregulated drinking systems
- ❑ Filling this gap through surveillance, intervention, education, and evaluation
  - Develop a data resource describing unregulated drinking water sources
  - Identify, recommend, and support interventions to address public health concerns associated with private wells
- ❑ 8 states funded
- ❑ Other Partners: Federal agencies, NGOs, CDC partners, ~25 states

# Collaboration with American Association of Poison Control Centers

## Examples:

- Gulf oil
- Fukushima
- Sports supplements containing DMAA



## For more information:

Division of Environmental Hazards and Health Effects:

[www.cdc.gov/nceh/ehhe](http://www.cdc.gov/nceh/ehhe)

Tracking Program: [www.cdc.gov/nceh/tracking](http://www.cdc.gov/nceh/tracking)

Tracking Network: [www.cdc.gov/ephtracking](http://www.cdc.gov/ephtracking)

Air Pollution and Respiratory Health Branch:

[www.cdc.gov/nceh/airpollution](http://www.cdc.gov/nceh/airpollution)

Health Studies: <http://www.cdc.gov/nceh/hsb/>

Radiation Studies: <http://www.cdc.gov/nceh/radiation/>

Climate and Health: [www.cdc.gov/climatechange](http://www.cdc.gov/climatechange)

**Thanks to Rish Vaidyanathan, George Luber,  
Heather Strosnider, Paul Garbe, Charlie Miller,  
and Anne Venner Yang Liu!**

# Questions?



[jxq1@cdc.gov](mailto:jxq1@cdc.gov)

**For more information please contact Centers for Disease Control and Prevention**

1600 Clifton Road NE, Atlanta, GA 30333

Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) Web: [www.cdc.gov](http://www.cdc.gov)

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.

National Center for Environmental Health

Division of Environmental Hazards and Health Effects

