

Building a Foundation for Decision Making Through Environmental Public Health Tracking

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National Center for Environmental Health
Centers for Disease Control and Prevention
November 5, 2008



Three Core Functions of Public Health

- ❖ Assessment
- ❖ Policy development
- ❖ Assurance

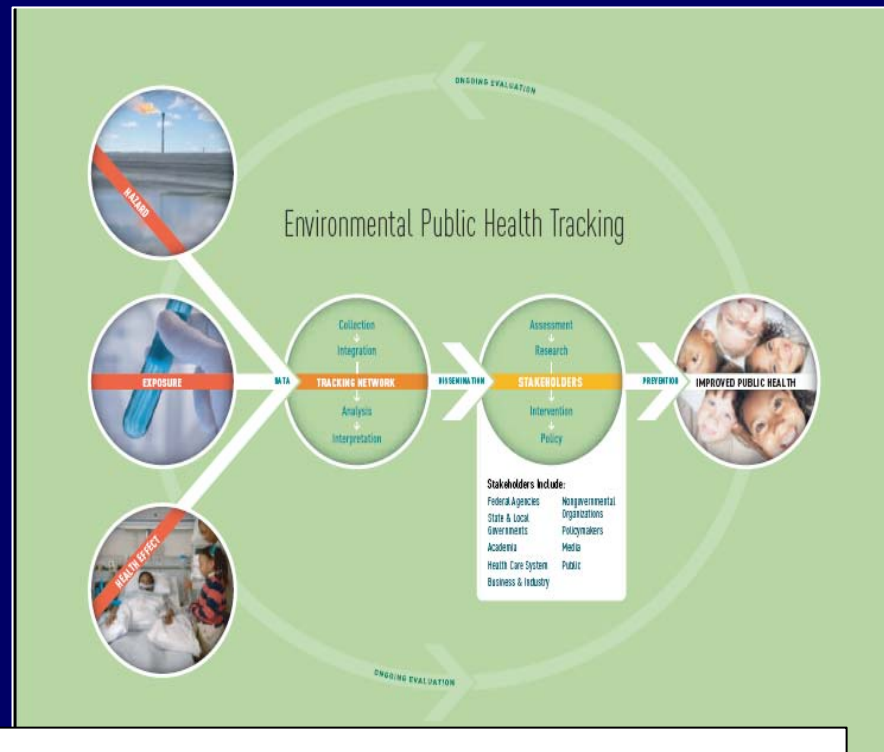
“The success or failure of any government in the final analysis must be measured by the well being of its citizens. Nothing can be more important to a state than its public health; the state’s paramount concern should be the health of its people.”

Franklin Delano Roosevelt



Bridging America's Environmental Health Gap

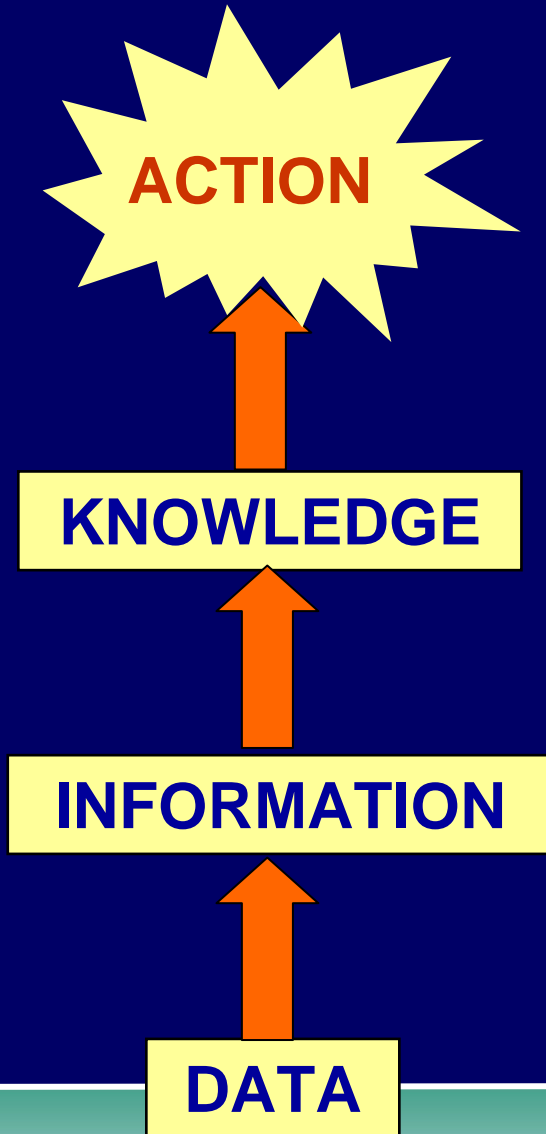
Environmental Public Health Tracking



“When the Pew Commission report came out, everyone—the press, the public, Congress—couldn’t believe that a tracking program didn’t already exist.”

SHELLEY HEARNE, Dr. P.H., FOUNDING EXECUTIVE DIRECTOR, TRUST FOR AMERICA'S HEALTH

Decision-making Foundation: Tracking Data

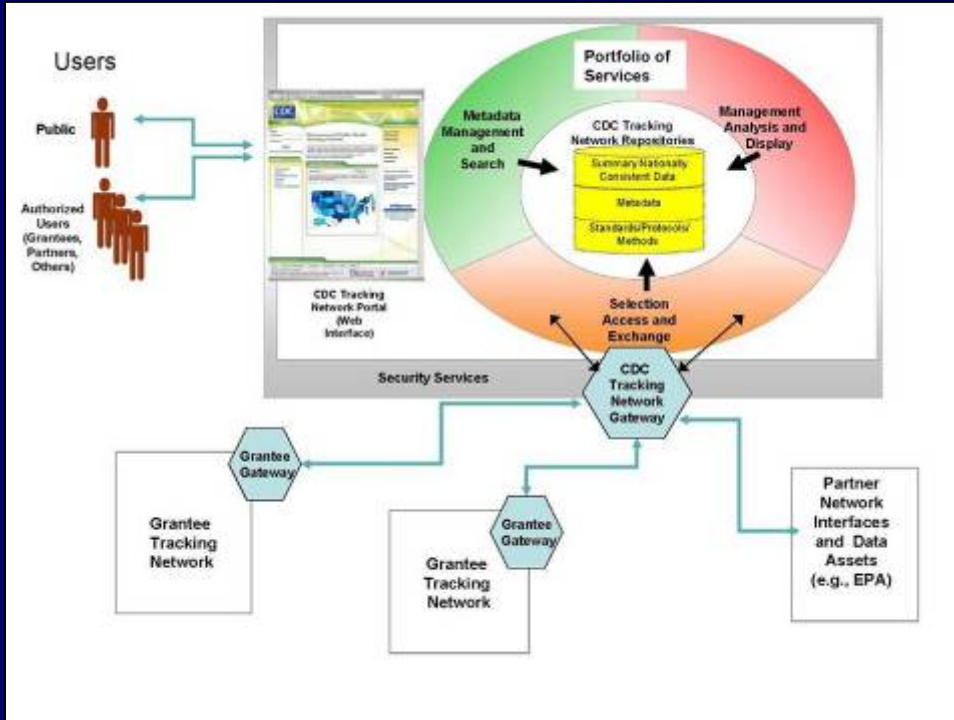


Information must be:

- ❖ Timely
- ❖ Valid
- ❖ Relevant
- ❖ Clear and easy to understand
- ❖ Comparable across time & place
- ❖ Sensitive, yet robust
- ❖ Accessible
- ❖ Actionable

Tracking Network: At-A-Glance

A web-based information system that exists at the local, state, and national level that serves the public, environmental public health agencies, health care providers and researchers



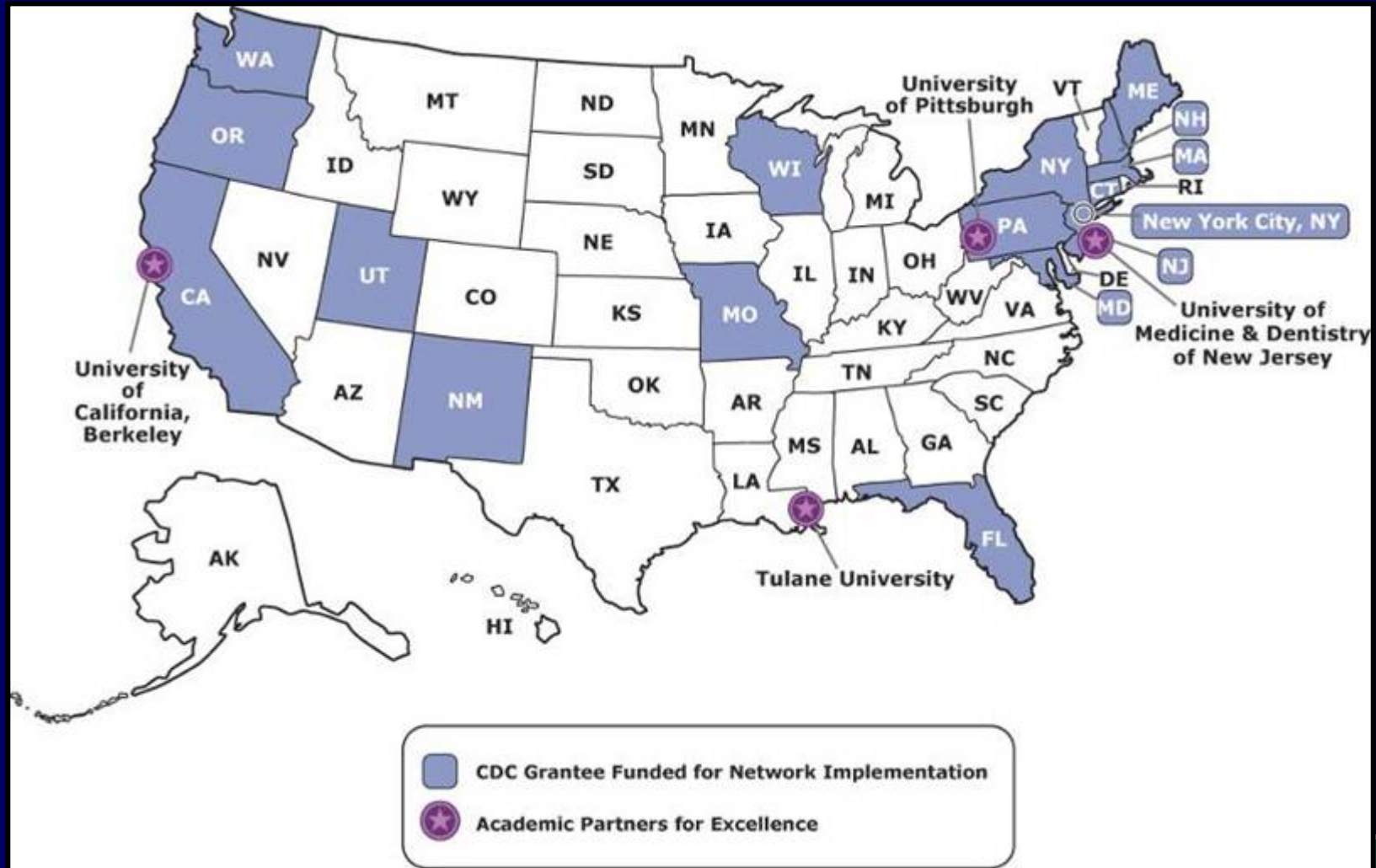
Functions:

- ❖ Provide Nationally Consistent Data and Measures
- ❖ Describe and Discover Data
- ❖ Exchange Data
- ❖ Provide Data Management and Analysis Tools
- ❖ Inform and Interact with the Public

Development Timeline



CDC's Tracking Program, 2008



Partners in Planning and Development

- ❖ State and local health departments
- ❖ Universities
- ❖ National public health and environmental health professional organizations
- ❖ Advocacy groups
- ❖ Other CDC Programs
- ❖ Other Federal Agencies



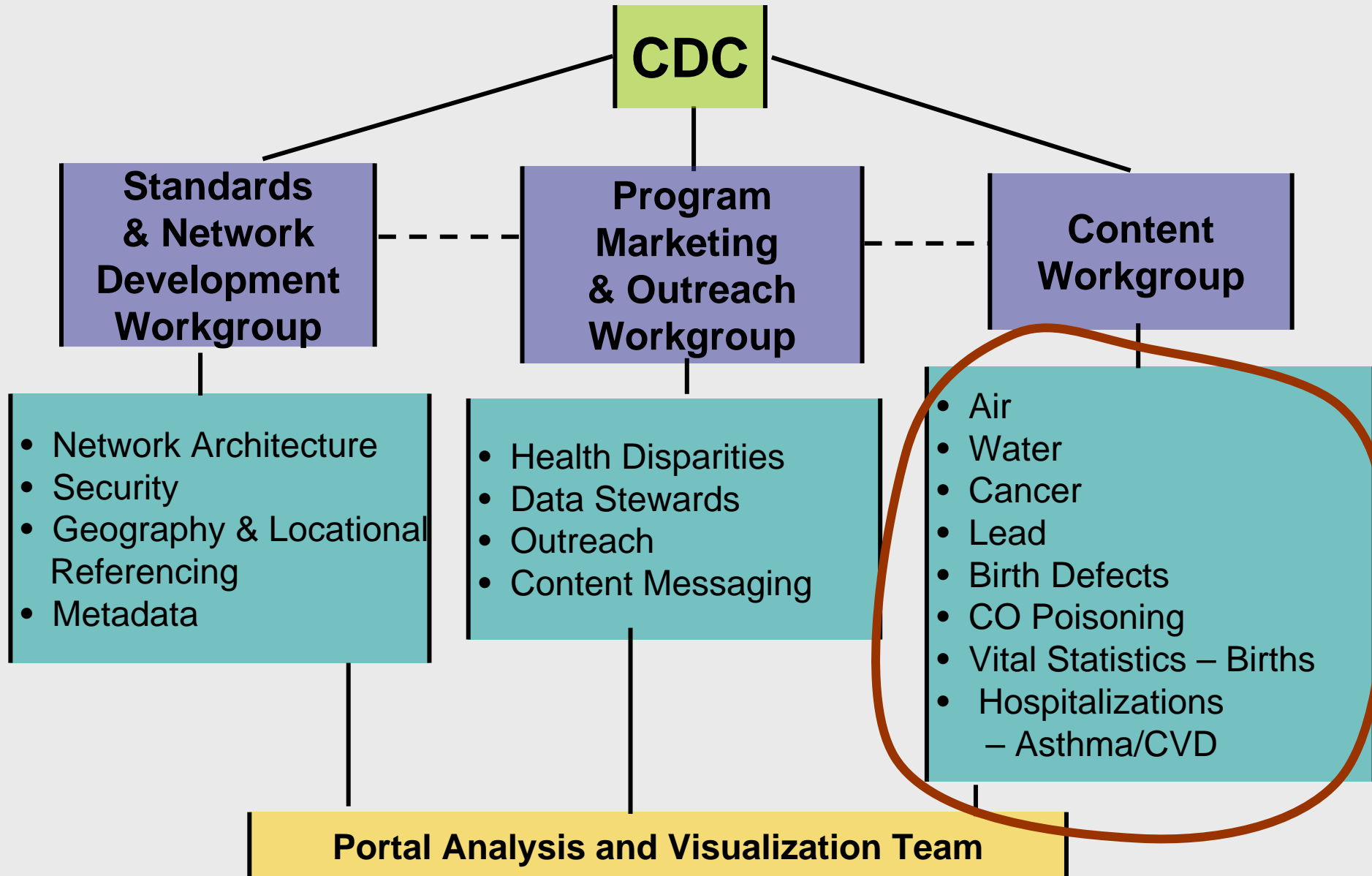
CDC – EPA Partnership



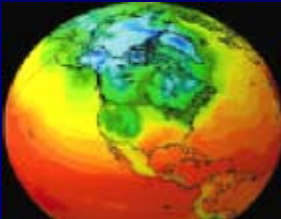
- ❖ MOU & IAG
- ❖ Health and Environment Linked for Information Exchange- Atlanta
- ❖ Public Health Air Surveillance Evaluation Project
- ❖ Exposure workshop
- ❖ Workshop on methodologies for tracking air pollution effects (with HEI)
- ❖ Interoperability Project
- ❖ Tracking Workgroups
- ❖ Indicators
- ❖ International



Collaborative Development Process



On the Horizon...



Global Climate Change



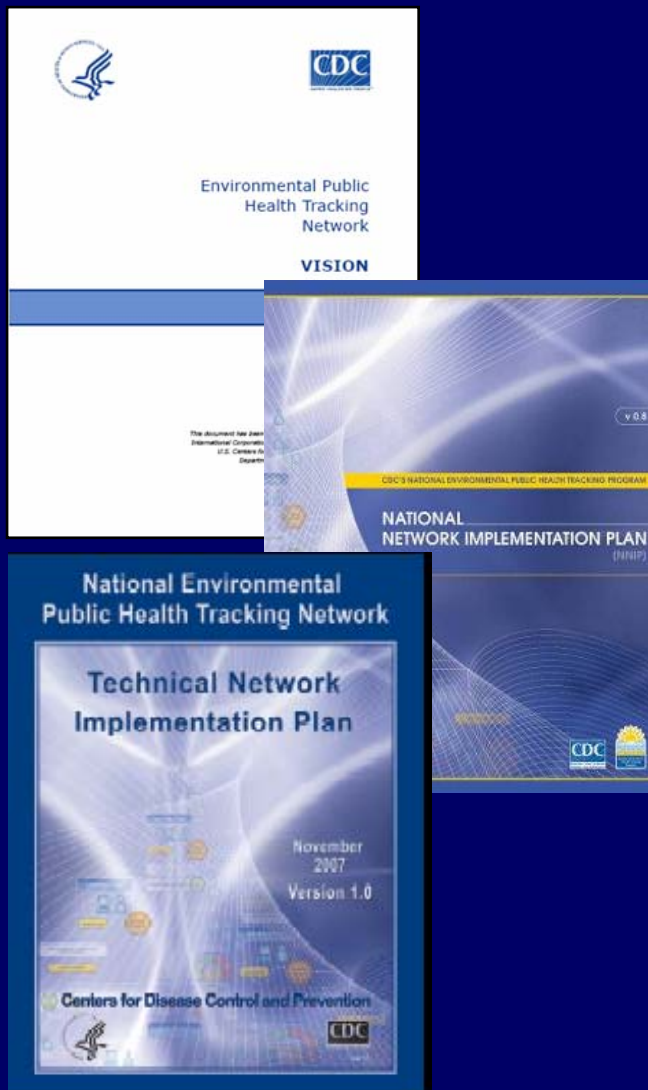
- ❖ Indicator development and piloting by Council of State and Territorial Epidemiologists – State Environmental Health Indicators Collaborative

Pesticide use and poisoning



- ❖ Proposal in development

Building the National Network



- **Design principles**
 - Re-use existing software and infrastructure
 - Metadata for everything
 - Adopt standards that exist
 - Provide a flexible framework for Network
- **User Testing**
- **Iterative Process**
- **Involves partners**
- **Continues beyond 2008**

Metadata – Why? What?

❖ Metadata are:

- Data about data
- Standard descriptions of data characteristics
- Best created by data collectors and stewards

❖ Metadata provide means for:

- Data owners/stewards to organize and internally manage data
- Data owners/stewards to “advertise” their data
- Data users to search and identify data of interest



Tracking Network Portal and Gateway Defined

- ❖ Portal – Web based interface for users to interact with the data and tools provided by the Tracking Network
- ❖ Gateway – Interface for machines to securely exchange data, with or without human interaction

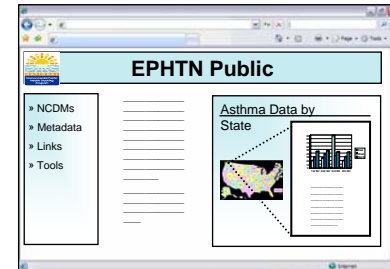


Grantee A

Public/Policy Makers

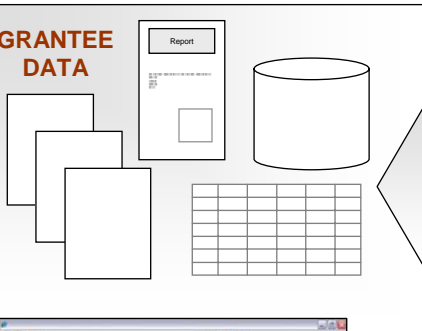


PUBLIC PORTAL



GRANTEE DATA

GRANTEE GATEWAY AND CLIENT

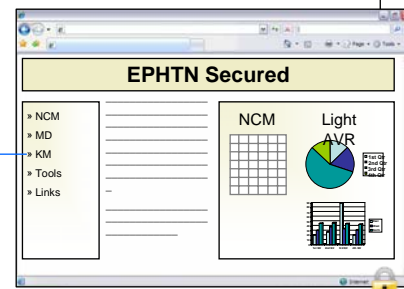


PHIN Sender
EN Client

Registered Users

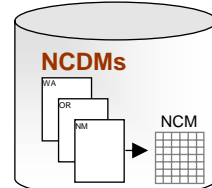


SECURE PORTAL

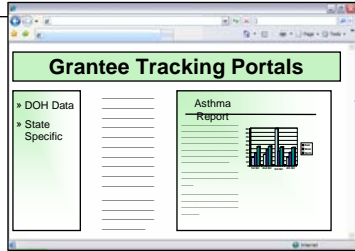
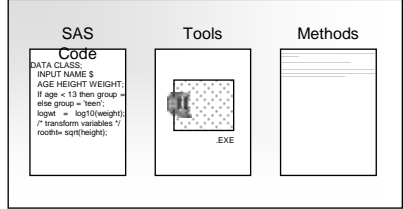


CDC

NATIONAL DATA REPOSITORY



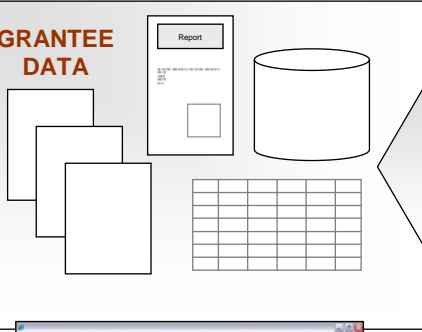
TOOLS, METHODS, AND OTHER RESOURCES



Grantee B

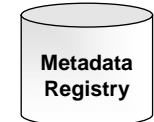
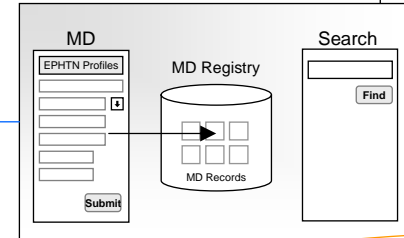
GRANTEE DATA

GRANTEE GATEWAY AND CLIENT

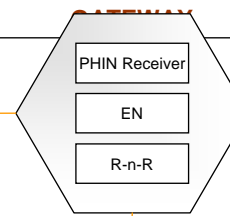


PHIN Sender
EN Client

METADATA SERVICES

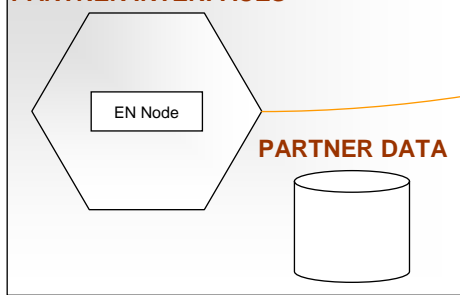


NATIONAL

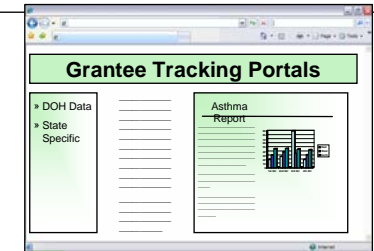


EPHTN Partner

PARTNER INTERFACES



PARTNER DATA



Transport of Data Sets Across the Tracking Network

❖ Tracking Network Gateways

- PHIN MS – CDC- Public Health Data
 - CDC's Secure and reliable message transport system
- Uses CDC's Secure Data Network infrastructure for data feeds to CDC
- EPA Exchange Network Software for transport of environmental data



National Tracking Network

Showcased at
Feb 09
National
Conference

Public Portal

- ❖ Share information
- ❖ Provides integrated one-stop access to health and environmental information
- ❖ Feedback and input from information users

Secure Portal

- ❖ Supporting secure collaboration among multiple partners
- ❖ Integrating health, exposure, hazard, and other data
- ❖ Sharing of methods, tools, and ideas
- ❖ Drawing board for turning data into information

Air - Drinking Water - Childhood Lead Exposure - CO -
Birth Defects - Birth Outcomes - Asthma & MI - Cancer



National Environmental Public Health Tracking Network

Under Development!

Search

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

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Wednesday, December 03, 2008 8:06:42 AM

- GLOSSARY
- CDC A-Z
- TRACKING A-Z**



Environmental causes of chronic diseases are hard to identify. Measuring amounts of hazardous substances in our environment in a standard way, tracing the spread of these over time and area, seeing how they show up in human tissues, and understanding how they may cause illness is critical. The National Environmental Public Health Tracking Network is the start of that system.

The National Environmental Public Health 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 explore information and view maps, tables, and charts about health and environment across the country.

[MORE ABOUT TRACKING >](#)

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Tracking Hot Topics

- Tracks 2009: Washington D.C. February 24-26, 2009

Resources

- Document Library
- Toolkit

Contact Us

Phone: 800-CDC-INFO
800-232-4636
888-232-6348 (TTY)

Email: epht@cdc.gov

Environments



Health Effects



Info by Location



National Environmental Public Health Tracking Network

Search GO

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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 #

Home > Environments

CDC TRACKING

- Environments
- Health Effects
- Info by Location

Environments



The build-up of greenhouse gases is changing the planet's natural systems, upon which all life depends.



Drinking Water

- Drinking Water and Health
- Tracking Drinking Water
- Search Drinking Water data



Homes

- Homes and Health
- Tracking Homes
- Search Homes data



Outdoor Air

- Outdoor Air and Health
- Tracking Outdoor Air

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- Login
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Under Development!

Drinking Water



People drink and use water every day

- Drinking Water and Health
- Drinking Water Monitoring in the US
- Drinking Water Contaminants

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Drinking Water
Tracking Drinking Water
Related Links

Drinking Water

The majority of Americans are provided high quality drinking water. About 90% of people in the United States get their water from a [community water system](#). The [U.S. Environmental Protection Agency](#) (U.S. EPA) sets regulations for treating and monitoring drinking water delivered by community water systems. There are water quality standards and monitoring requirements for over 90 contaminants. About 10% of Americans rely on smaller water supplies (mostly household wells) that are not regulated by the EPA. Treatment and monitoring requirements for these small systems vary from state to state. Drinking water protection programs at the state and national levels play a critical role in ensuring high quality drinking water and in protecting the public's health.

Additional Links

- Arsenic
- DBP's
- Lead
- Nitrate



On this website you will find data and information about the levels of four contaminants in drinking water: nitrate, arsenic, disinfection by-products, and lead. These contaminants were selected for the Tracking Network because they occurred more frequently in drinking water at levels which may be of public health significance. The contaminants also have a range of natural and man-made sources.



National Environmental Public Health Tracking Network

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- 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 #

Home > Health Effects

CDC TRACKING

- Environments
- Health Effects**
- Info by Location

Health Effects



Asthma is a disease that effects the airways that carry oxygen in and out of the lungs



Asthma

- ⌘ Asthma and the Environment
- ⌘ Quick report about Asthma
- ⌘ Search Asthma Data



Childhood Lead Poisoning

- ⌘ Childhood Lead Poisoning and the Environment
- ⌘ Quick report about Childhood Lead Poisoning
- ⌘ Search Childhood Lead Poisoning Data



Birth Defects

- ⌘ Birth Defects and the Environment
- ⌘ Quick report about Birth Defects



Heart Attacks

- ⌘ Heart Attacks and the Environment
- ⌘ Quick report about Heart Attacks

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Home > Health Effects > Asthma

- GLOSSARY
- CDIAZ**
- TRACKING A-Z

- Environments
- Health Effects**
- Info by Location

Under Development!

Asthma



In 2003, there were over 574,000 hospitalizations for asthma.

- Asthma and the Environment
- Exposure and Risk
- Prevention

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Email: ept@cdc.gov

- 
- Asthma
- Tracking Asthma
- Related Links

Asthma



In 2004, 20.5 million people in the U.S. reported having asthma. In 2003, there were over 574,000 hospitalizations for asthma. In 2002, there were over 4,200 deaths in which asthma was the underlying cause. Asthma is the leading chronic health condition among children. There are also large racial, income, and geographic disparities in poor asthma outcomes. Asthma causes lower quality of life, preventable undesirable health outcomes, and large direct and indirect economic costs.

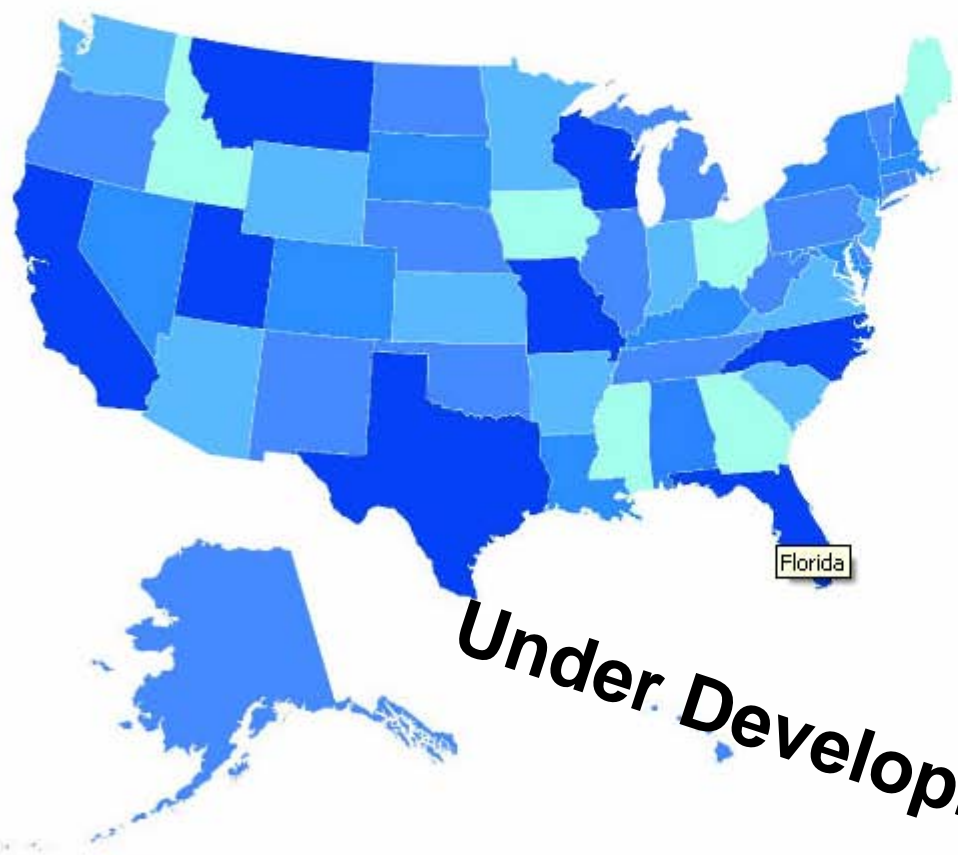
Tracking asthma hospital admissions using a standardized method will allow for the monitoring of trends over time; identify high risk groups; and inform prevention, evaluation and program planning efforts.

Asthma Indicators Available on the Tracking Network



Info by Location

Select location(s) using the map and pick list to view information.



- All States**
- 09 Connecticut
 - 10 Delaware
 - 11 District of Colum
 - 12 Florida**
 - 13 Georgia
 - 15 Hawaii
 - 16 Idaho
 - 17 Illinois
 - 18 Indiana

ADD

- Selected**
- Selected States
 - 12 Florida**

REMOVE

HHS and EPA Regions Tracking States and Cities

Under Development!

GO

Query and Results

View Data Related To:

Content Area:

Select Indicator:

Select Measure:

Select Location and Time:

Use Ctrl+Click to multiple years, multiple states, or multiple counties. Use Shift+Click for a range.

<input type="checkbox"/> All States	<input type="checkbox"/> All Years
<input type="checkbox"/> All Counties	<input type="checkbox"/> 2000
<input type="checkbox"/> ALABAMA	<input type="checkbox"/> 2001
<input type="checkbox"/> ALASKA	<input type="checkbox"/> 2002
<input type="checkbox"/> ARIZONA	<input type="checkbox"/> 2003
<input type="checkbox"/> ARKANSAS	<input type="checkbox"/> 2004
<input type="checkbox"/> CALIFORNIA	<input type="checkbox"/> 2005
<input type="checkbox"/> COLORADO	<input type="checkbox"/> 2006
<input type="checkbox"/> CONNECTICUT	<input type="checkbox"/> 2007
<input type="checkbox"/> DELAWARE	<input type="checkbox"/> 2008

Select View:

View measure for selected area(s) (unsmoothed)

View pattern surrounding selected area(s) (smoothed)

+ Advanced View Options

+ Map Options

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E

By using these data, you signify your agreement to comply with the following requirements:

1. Use the data for statistical reporting and analysis only.
2. Do not attempt to learn the identity of any person included in the data and do not combine this data with other data for the purpose of matching records to identify individuals.
3. Do not disclose or make use of the identity of any person or establishment discovered inadvertently and report the discovery to:

Associate Director for Science
Office of Science Policy and Technology Transfer, CDC
Mail Stop D50
Phone: 404-639-7240
4. Do not imply or state, either in written or oral form, that interpretations based on the data are those of the original data sources or CDC unless the data user and data sources are formally collaborating.
5. Acknowledge, in all reports or presentations based on these data, the original source of the data and CDC.

GRAPH VIEW TABLE VIEW MAP VIEW

Under Development!

National Secure Portal

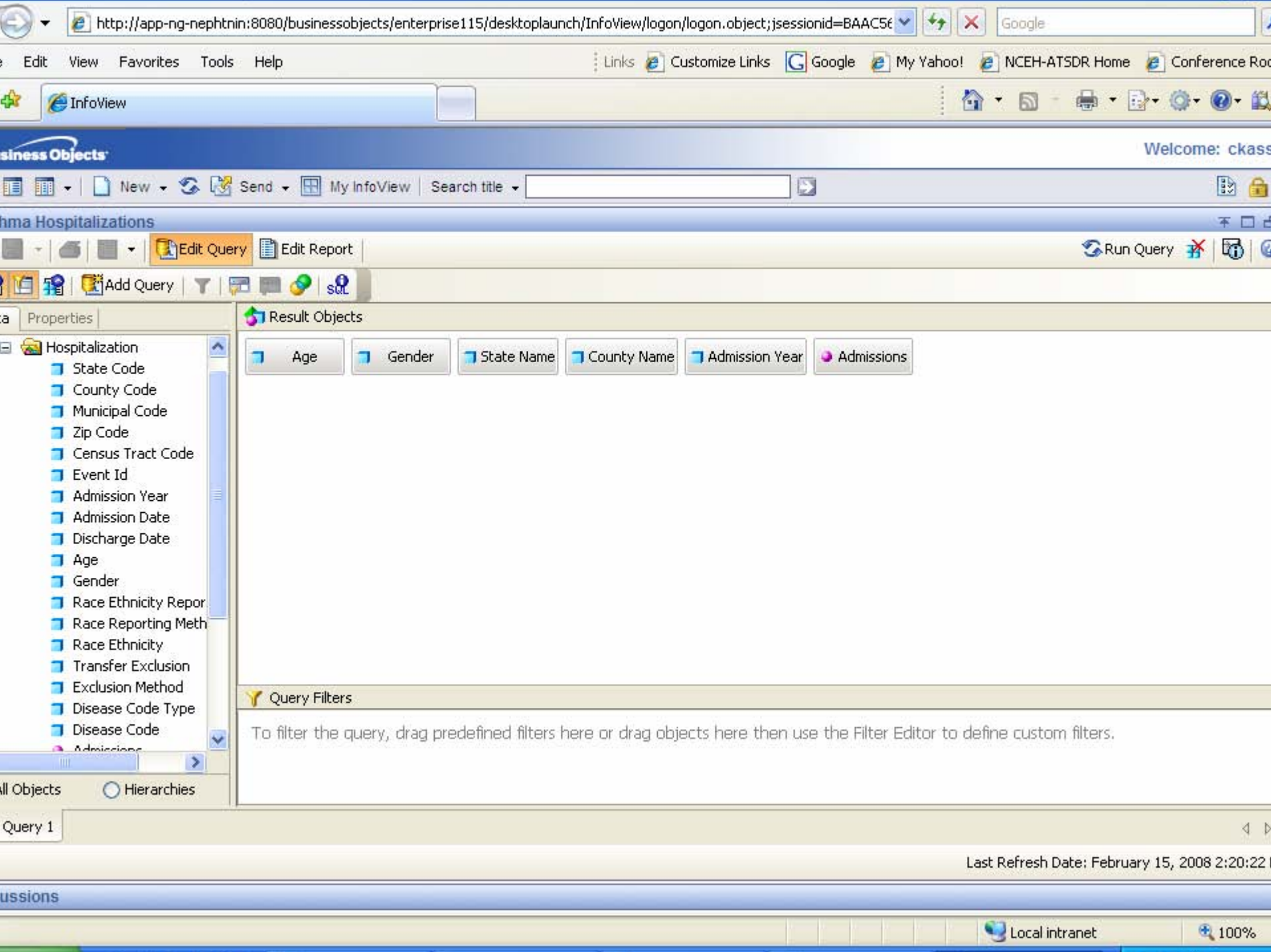
- ❖ Federal IT Security Stds.
- ❖ Registered users
 1. Authentication – CDC Secure Data Network
 2. Authorization –
 - Application Level – role based
 - Data access – role and use based
 - ❖ State provided data – approval by state
 - ❖ Federal/federally held data – as determined by DSA



Business Objects Web Intelligence

- ❖ Provides a large array of tools on a single integrated platform
 - Secured management of data
 - Data integration capabilities
 - Analysis (reporting, charting, mapping, linking)
 - Integration with Microsoft Office products
 - Standards compliant (XML, Java)
 - Integrated Learning Tools (Knowledge Accelerator)





Data Templ... Map Proper...

Data

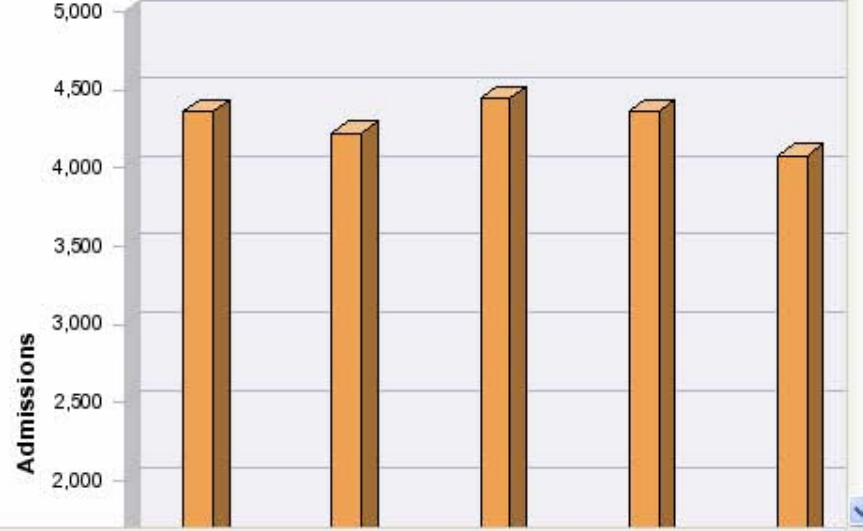
- Asthma Hospitalizations
 - Admission Year
 - Age
 - County Name
 - Gender
 - State Name
 - Admissions

Admission Year State Name Admissions

2006	Florida	139
2005	Florida	144
2004	Florida	145
2003	Florida	140
2002	Florida	149
2001	Florida	137
2000	Florida	146
	Florida	1,000

Admission Year State Name Admissions

2005	Utah	3,919
------	------	-------



Lesson Learned

- ❖ **XML is hard for non-IT professionals**
 - Investigated EPA's Schematron implementation
- ❖ **Fine balance between functionality and usability – existing tools may not be the best choice always**
- ❖ **Collaborative development takes a long time but yields solid stakeholder buy-in**
- ❖ **Organizing broad information for public consumption is a challenge – it is easy to rebuild silos**

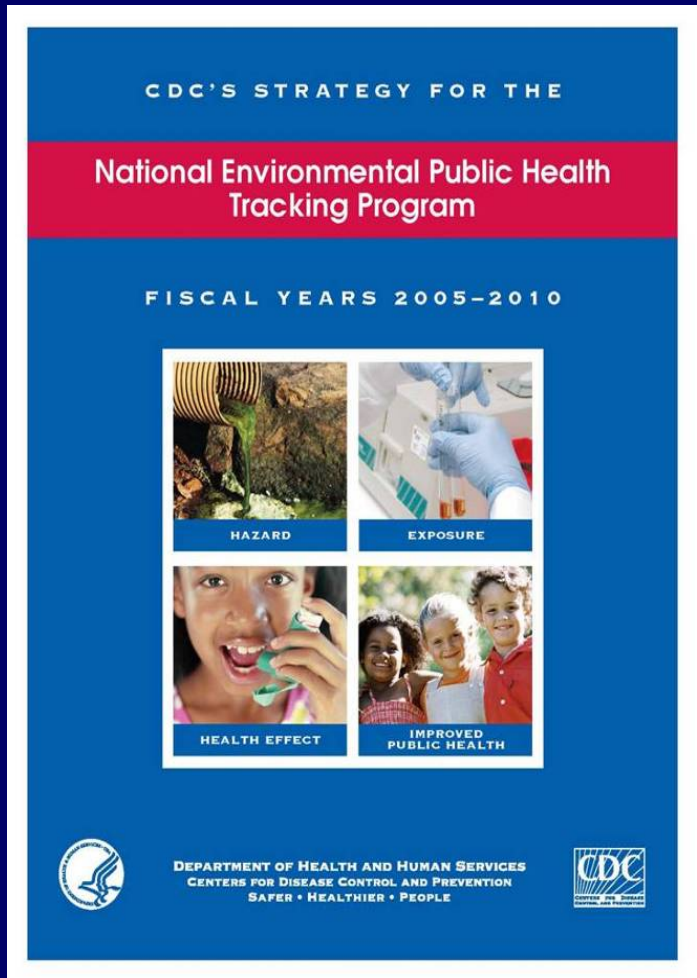


Challenges in Moving From Data to Action

- ❖ **Data resolution**
 - Reaching local levels
- ❖ **Appropriate “exposure” metrics**
 - Utility to stakeholders
 - Translating for public
- ❖ **Measuring health impact**
 - Workshop on Methodologies for Tracking of Air Pollution Effects, Jan 2008



Milestones - 2009



- ❖ Launch Network
- ❖ National Conference, Feb 2009, Washington, DC
- ❖ 1st Health and Environment Report
- ❖ Tracking Research Agenda





“Longer term, tracking will be able to provide a real service to the American people. I can envision a day when people will be able to go to the Tracking Web site and instantly find a wealth of easily understood information about their community—on the environment, possible human exposures, and the overall health status of their neighborhood. They will be able to make informed decisions on not only where but also how they live. We still have plenty to do before we get to that point, but that’s the tracking goal, and we’re heading in the right direction.”

Michael McGeehin, Ph.D.

**DIRECTOR, DIVISION OF ENVIRONMENTAL HAZARDS AND
HEALTH EFFECTS, NATIONAL CENTER FOR ENVIRONMENTAL HEALTH, CDC**



For more information:
www.cdc.gov/nceh/tracking



Questions?

