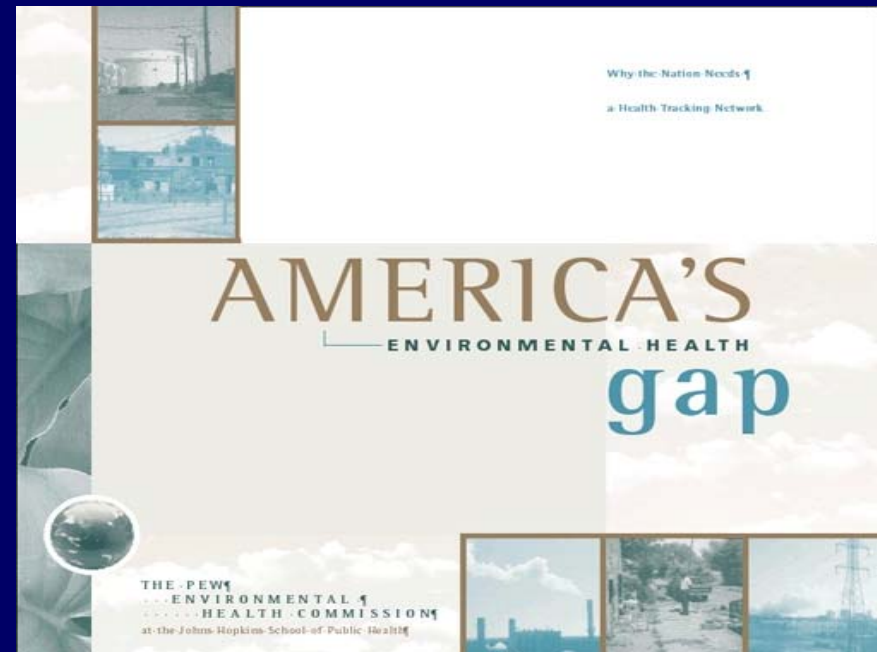


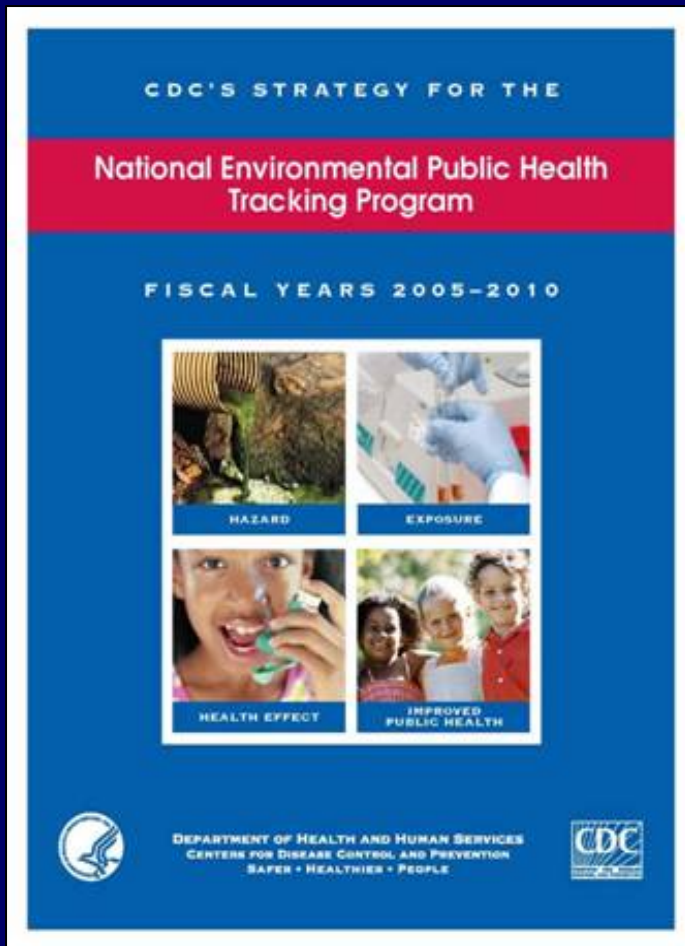
CDC's National Environmental Public Health Tracking Network

Judith R. Qualters, Ph.D.
Chief, Environmental Health Tracking Branch
Division of Environmental Hazards and Health Effects
National Center for Environmental Health
Centers for Disease Control and Prevention (CDC)
770-488-3821 (effective 1/28)

National Environmental Public Health Tracking Program

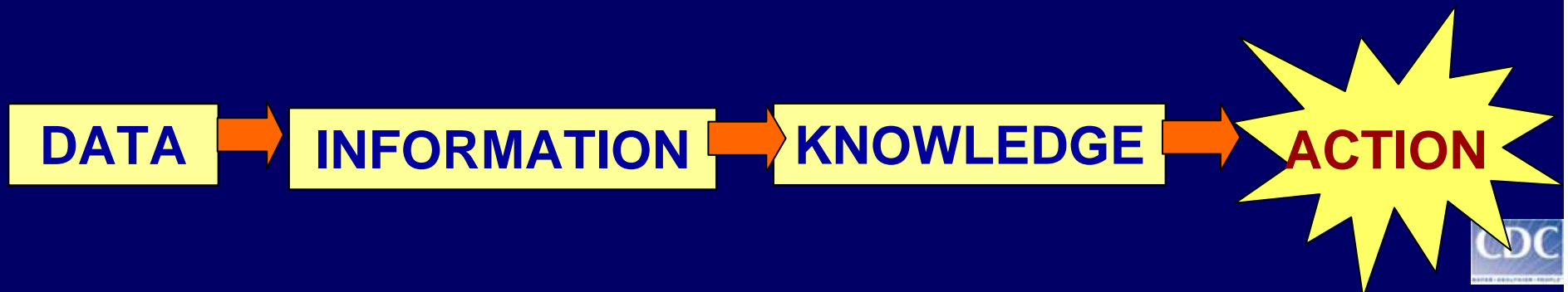
- Created in response to Pew Commission report
- Recommended a “Nationwide Health Tracking Network for diseases and exposures”





Mission

To provide information from a nationwide network of integrated health and environmental data that drives actions to improve the health of communities



Conceptual Model by which an Environmental Agent Produces an Adverse Effect (Thacker, et al)

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)

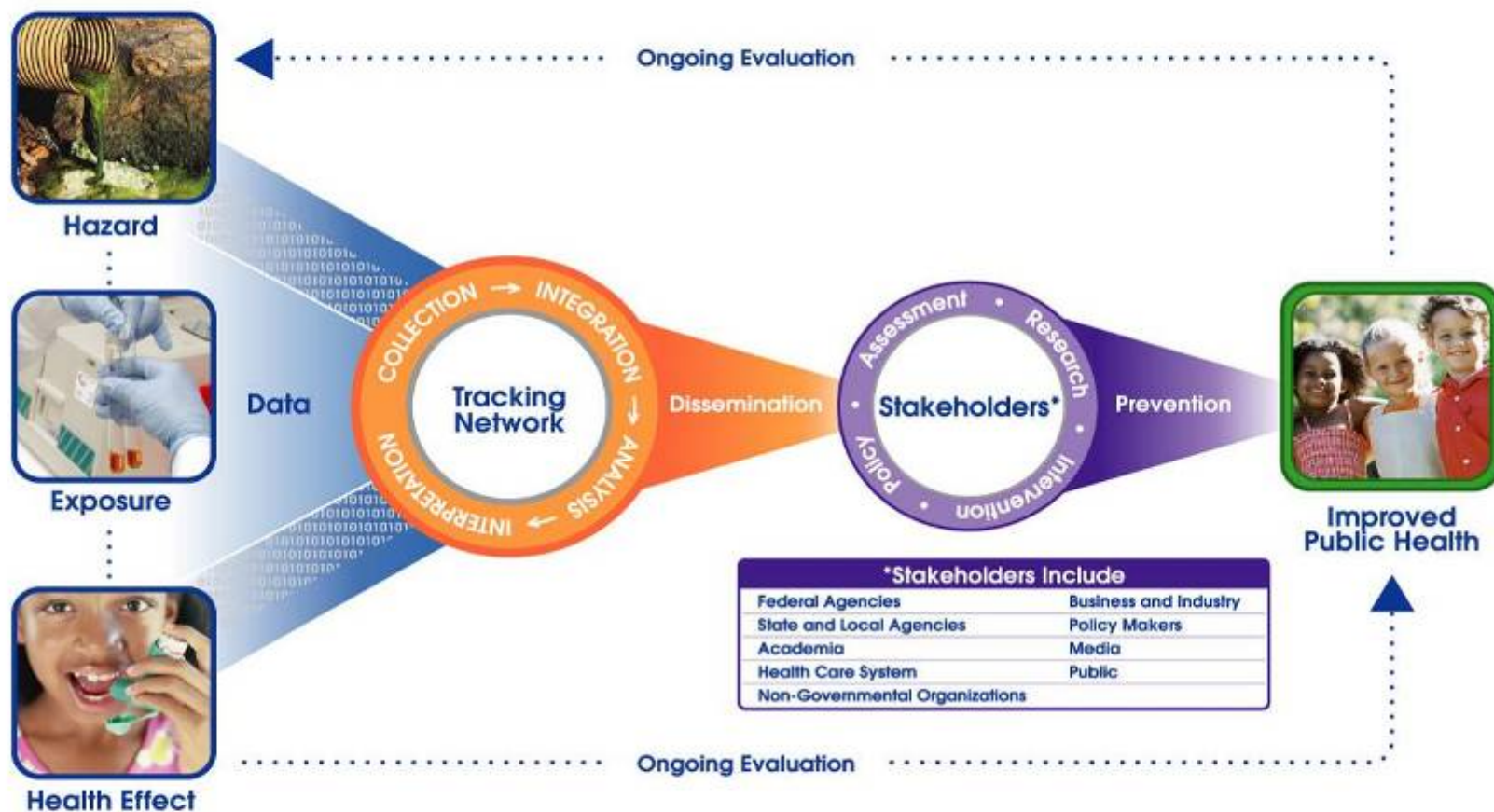
Adverse effect becomes clinically apparent

**Hazard
Tracking**

Exposure Tracking

**Health Effects
Tracking**

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	

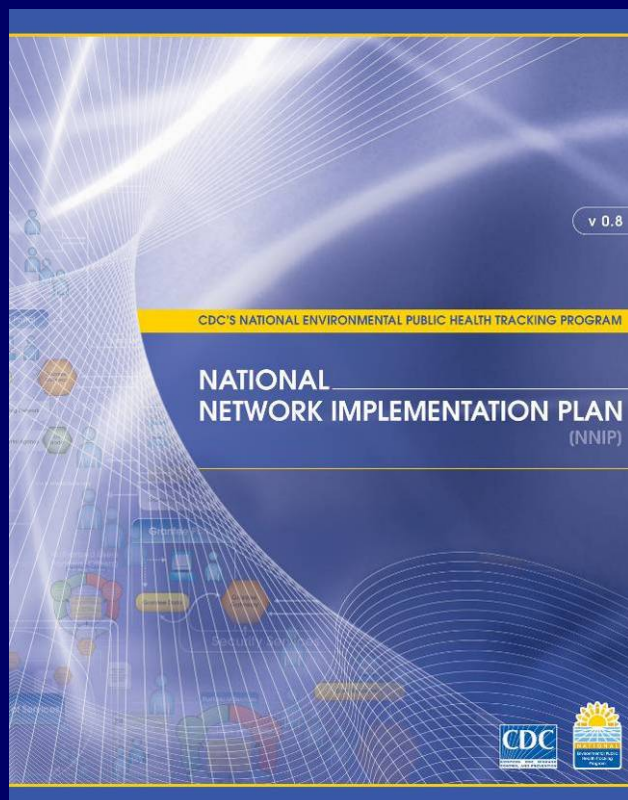


DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
SAFER • HEALTHIER • PEOPLE



Tracking Network

At-a-Glance



- **Web-based information system that exists at the local, state, and national level**
- **Provides access to nationally consistent data and measures of environmental health status**
- **Serves the public, environmental public health agencies, health care providers and researchers**
- **Public and secure portals**
- **Protects privacy of individuals**

STRATEGIC PARTNERSHIPS FOR DEVELOPING & IMPLEMENTING ENVIRONMENTAL PUBLIC HEALTH TRACKING



CDC – EPA Collaboration

- MOU
 - Strategic Directions
- IAG - air
- Collaborative projects
 - PHASE
 - Interoperability
 - Indicators / NCDMs
- Workshops

EPA/CDC: National and International Collaborations on Health and the Environment

William Sonntag, Jr., OIA, EPA and Hal Zenzick, Ph.D., ORD, EPA
Michael A. McGeehin, Ph.D., M.S.P.H., DEHEM/NCHE/CDC and Judith R. Qualters, Ph.D., EHTB/DEHEM/NCHE/CDC

Background

Peer Commission, Environmental Health Review

- Environmental health systems were reassessed and reorganized
- Responsibilities realigned among agencies
- Update to the environmental and health database
- Chronic conditions account for 4 out of every 5 deaths in the United States
- Awareness needed about the role of the environment on health outcomes

Reestablished a "National Health Tracking Network for disease and exposure"

EPA's Environmental Information Exchange Network (EIN) provides environmental and human health monitoring data to support public health activities and environmental and health outcomes. The Exchange Network provides a platform for the exchange of data for research needs, access to data to support research, and integration of health and environmental information. There are now 10 operational data exchange routes with states.

CDC's National Environmental Public Health Tracking Program

Reauthorized by Congress in FY2010, the Tracking Program will continue community health through the use of information from the environmental and public health data systems. As the cornerstone of the program, the Tracking Network will integrate information on environmental hazards, human exposure to environmental hazards, and health effects primarily related to exposure to environmental hazards.

MOU, EPA and DHS (CDC and ATSDR)

The purpose of the MOU is to improve efforts to reduce mutual environmental public health risks and strengthen the linkage between the environmental and public health communities by:

- Linking EPA Exchange Network and CDC Tracking Network
- Sharing of data and related environmental and public health data from CDC and EPA networks



Improving Data Utility, Methods and Tools

Example: Public Health Air Surveillance Evaluation Project (PHASE) Regions: CDC, Maine, New York, Missouri, and EPA

The purpose of this project is to demonstrate the advantages and limitations of methods of generating air-quality observational surveillance data that can be readily available to use with public health surveillance data.

Expected Products:

- Funding available to assist states to use with active and condensed hospital data
- Guide for using PHASE information for tracking purposes
- Health Alerts
- Peer-reviewed scientific publications on methods, evaluation results, and lessons learned


➔


State and Local Activities: CDC's Tracking Program and EPA Health-Related Challenge Grants

California


CDC Tracking Network: Considered the priority (1) the Alameda County Department of Public Health to address surveillance issues of asthma birth and low birthweight, and (2) the Contra Costa County, and (3) the Contra Costa County. California's Environmental Health Tracking Program is tracking the geographic, residential, occupational, and SES risk factors related to asthma, birth low birth weight, and low birth weight, and data from the State Population Survey.

EPA Exchange Network: CDC Department of Health supports in conducting a Web-based, integrated public-use tracking system (PHASE) to exchange data with other data, local, and federal entities through the CDC Exchange Network.

Maryland

CDC Tracking Network: MD Department of Health and Mental Hygiene and Department of the Environment oversees (1) the collection of core and PHASE on individual activities and individual activities, (2) the use of PHASE data to identify risks in four state counties, (3) the use of PHASE data to identify risks in four state counties.

EPA Exchange Network: The MD Department of the Environment will plan and implement the exchange program, and conduct the exchange program, and conduct the exchange program, and conduct the exchange program.



■ CDC Tracking Network Grants
■ EPA Health-Related Challenge Grants
■ CDC and EPA Grants


Interoperability of Data Systems

Main York State Data Exchange Project

- Collaboration between CDC, EPA, NY State
- Conducted interoperability studies on public health information, health tracking networks and EPA Exchange Network
- Successfully established an integrated tracking and exchange network
- Automatic exchange of all data between the State's Department of Health and Department of Environmental Conservation

Tracking and Exchange Network Interoperability Pilot

- Addressing the exchange requirements of the Agency
- Exchange data
- EPA and CDC issues to State data among CDC, EPA, and states with mutual transition





Environmental Health Indicators

CDC and EPA working together for better coordination:


- Comparing indicators to identify common processes, priorities, and resources
- Working with CSTE and states to develop and pilot indicators
- Full use for the information, information and data mining
- Partnering with European colleagues, European Environment Agency, WHO Europe, United Nations Environment Programme, and the European Commission, to understand differences and similarities of indicators in Europe and the U.S.
- The Interoperability Task Force published the final milestone Report under the Section 2012 program, which includes about 20 indicators from the Environmental and Public Health Data Exchange Network.

http://www.epa.gov/interoperability_pilot_pilot_2012.pdf





CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

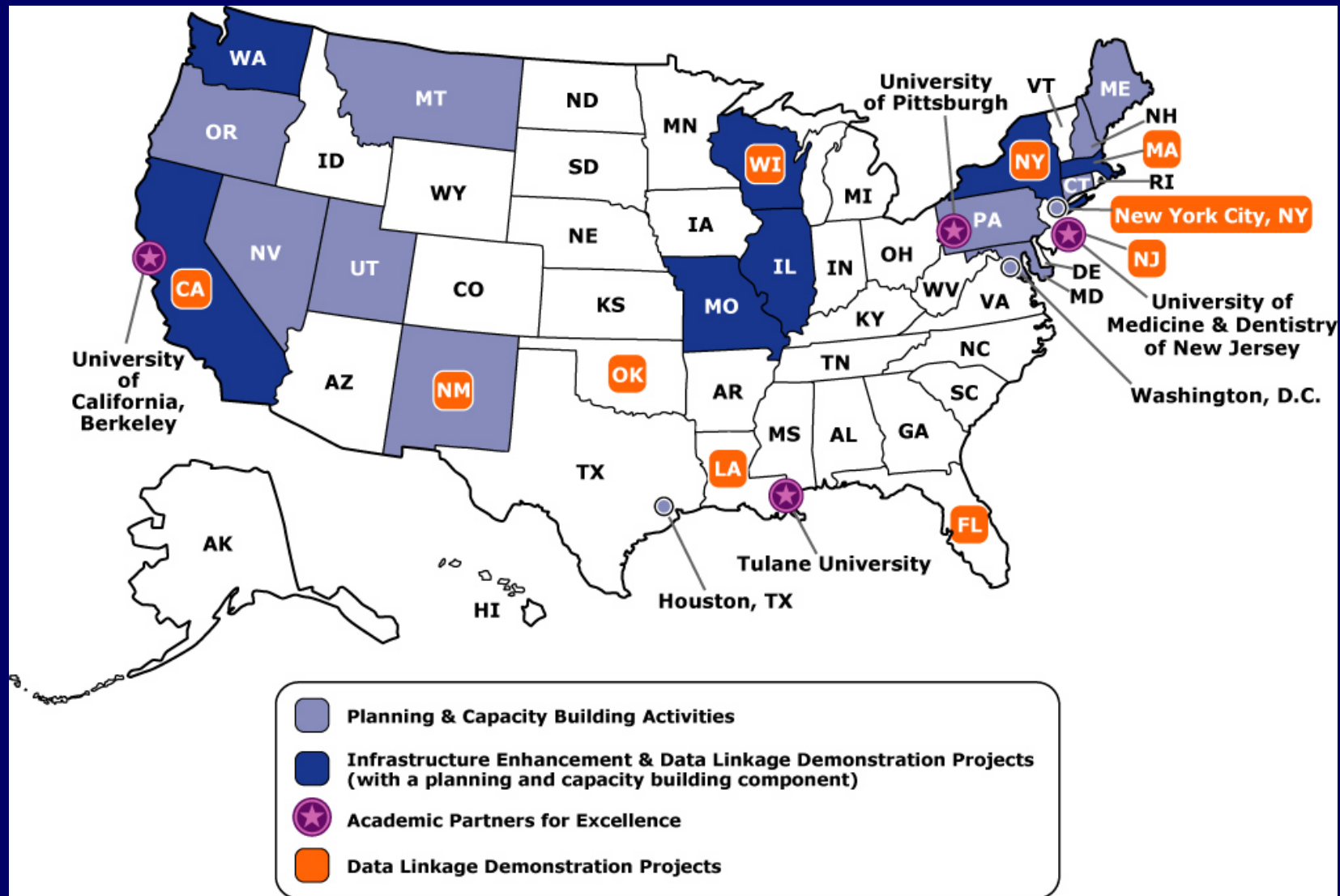


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**2002 - 2006
Pilot Projects Lead
the Way.....**



Developing the Tracking Program: Grantees – 2002 to 2006



Projects

Measured	# Grantees	# Projects
Air	13	19
Asthma	11	14
Water	11	23
Cancer	8	9
Lead	6	7
Birth defects	5	7
Pesticides	4	4
Reproductive health	4	4
CO	3	3
Fish/shellfish	2	2

Evaluation of Tracking, 2002-2006

conducted by Johns Hopkins

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

Data to Action

Reducing Emissions in WI

- **Regional Air Impact Modeling Initiative**
 - Toxic air pollutant concentrations and community cancer risk
 - Developed by EPA, implemented by DNR & DHFS
- **Community expressed concern about TCE emissions**
- **DHFS presented factory with information**
- **Factory reduced emission, though already compliant with regulations**



Complexity...

“Initially we thought we could quickly link environmental and health data to investigate community concerns; however, we found tracking is like peeling an onion—each layer reveals more issues that require extensive work to find the answers we seek.”

LuAnn E. White, Ph.D.
Professor and Director
Tulane School of Public Health and Tropical Medicine
Center for Applied Environmental Public Health

Challenges Encountered in Pilot Projects

Data

- Access
- Quality
- Not in electronic format
- Geocoding issues
- Little standardization
- No metadata
- Spatial/temporal misalignment
- Little exposure data

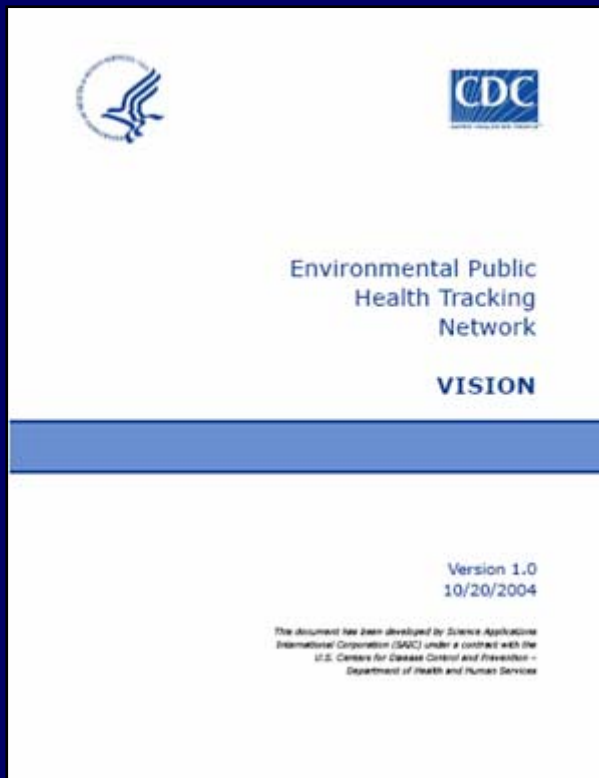
Methods

- No common toolbox of methods
- Issues with exposure estimation and misclassification
- Level of resolution
- Small numbers
- Latency/induction
- Confidentiality

Interpretation & Communication

- Sensitivity /Specificity
- Confidentiality
- Audience
- “Plain speaking”
- Actionable?

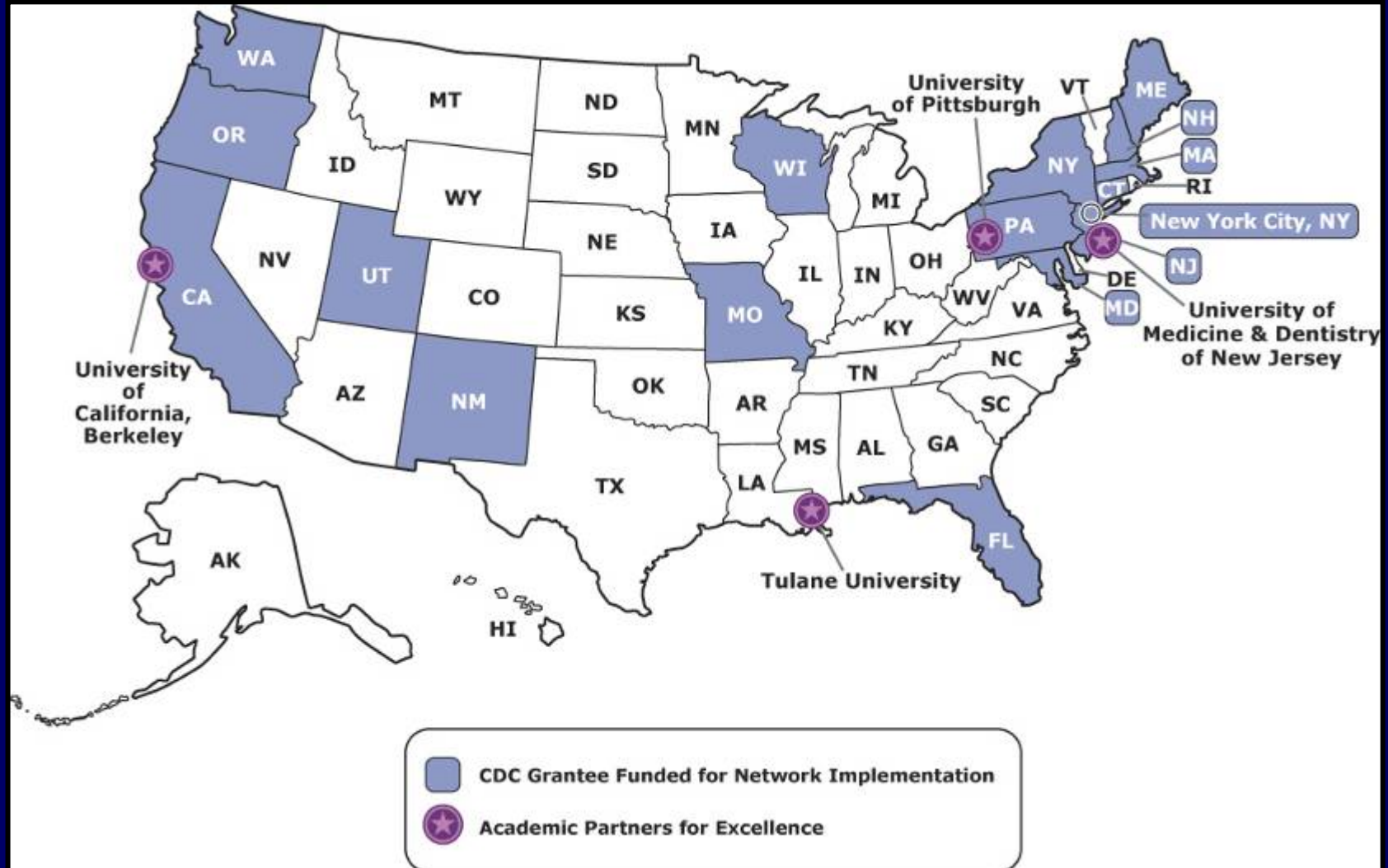
Planning to Implementation



Setting Priorities for Network Content: Tracking Hazard, Exposure, and Health Effects

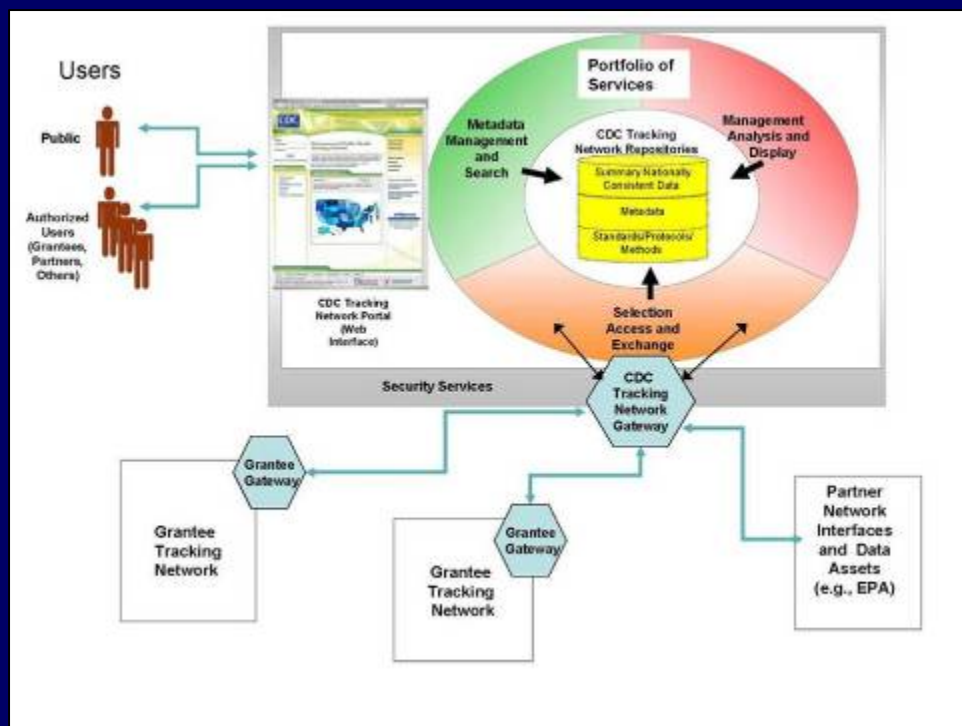


CDC's Tracking Program Grantees



Tracking Network Implementation

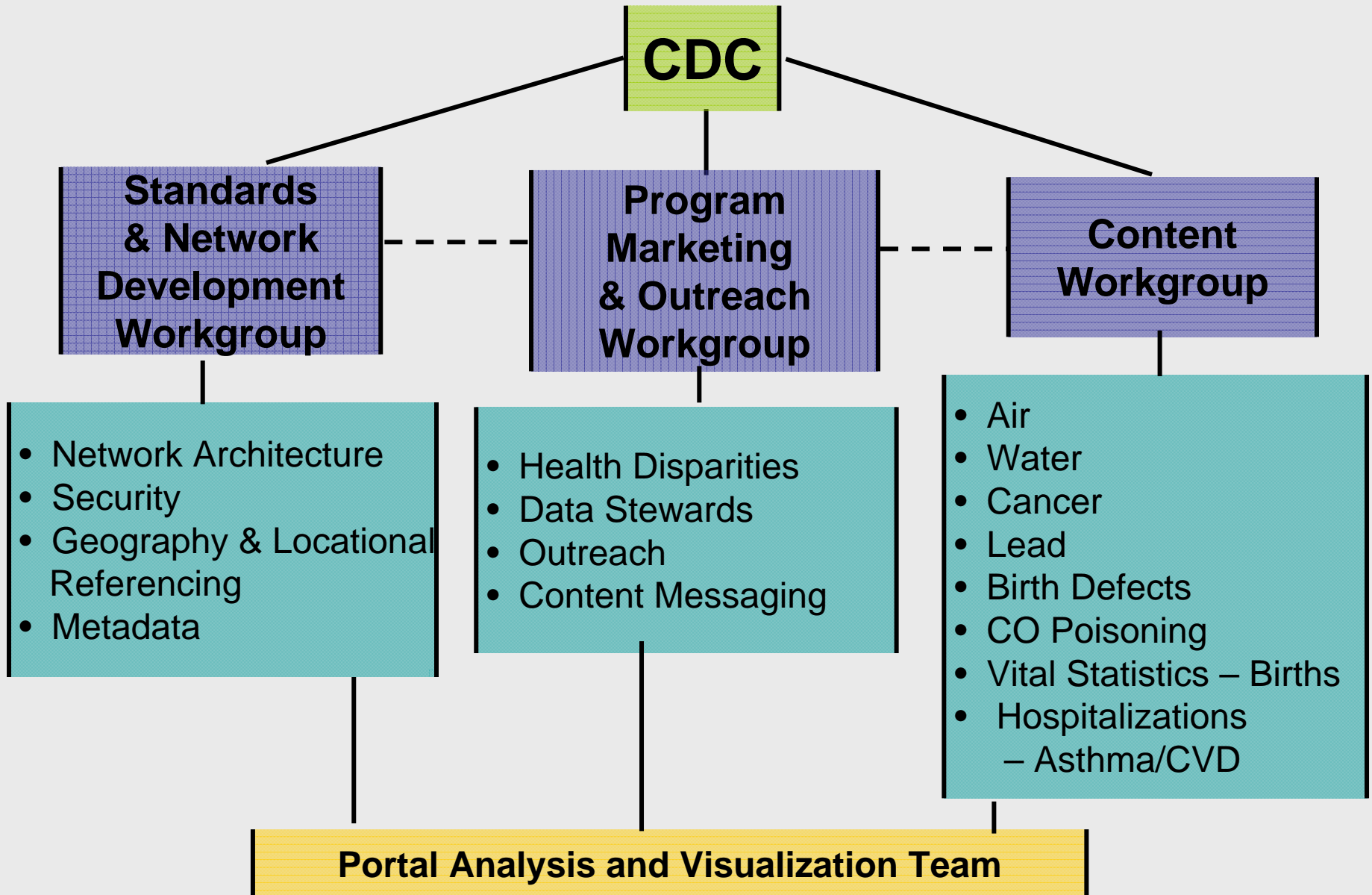
Going “live” in 2008



Functions

- Compile and provide nationally consistent data & measures (NCDMs)
- Describe and discover data
- Exchange data
- Provide data management, analysis, and display tools
- Inform and interact with the public

Ensuring Stakeholder Input



Content Workgroup

- **NCDM Recommendations to CDC**

- **Identify, adopt/adapt/develop, pilot indicators/measures**

- **Rationale**
- **Data sources**
- **Limitations**
- **Future directions**
- **How-to-guides**

- **Data to support measures**

Indicator Template
Asthma Hospitalizations
Environmental Public Health Tracking
10-24-07

Health outcome

- Annual number of asthma hospitalizations, by age, gender, race/ethnicity, and geography
 - Monthly Average, Maximum, and Minimum Daily Number of asthma Hospital Admissions
 - Daily Number of asthma Hospital Admissions
- Annual unadjusted (crude) rate for asthma hospitalizations, for all ages, by gender, race/ethnicity, and geography
- Annual age-specific rates of asthma hospitalizations, by gender, race/ethnicity, and geography
- Annual age-adjusted rate for asthma hospitalizations, for all ages, by gender, race/ethnicity, and geography

Numerator: Resident hospitalizations for asthma, ICD-9-CM: 493 XX by gender and total for state and by county
Denominator: Midyear resident population, by gender, for state and by county
Adjustment: Age-adjustment by the direct method to Year 2000 US Standard population

Number of hospitalizations per 10,000 population

State

Residents of jurisdiction – State, County (ZIP code available for all measures once postcensal population data source identified)

Hospital admissions between January 1 to December 31, inclusive, for each year, 2000-2005; annually thereafter

Daily, monthly, and annual (as appropriate for the measure)

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. Environment Attributable Fractions of the 1998-1994 economic costs for asthma were 39.2% for children <6 years and 44.4% for 6-16 year olds, costing more than \$400 million for each age group.

A number of epidemiologic studies have reported associations between air pollution exposures and asthma. The association between ambient air particulate matter (PM) concentrations and asthma, including increased hospital admissions, is well documented. Models demonstrate 5-20% increases in respiratory-related hospital admissions per 50µg/m³ of PM₁₀ and 5-15% per 25µg/m³ of PM_{2.5}, with the largest affect on asthma admissions.

In the Eastern United States, summer ozone pollution was associated with more than 50,000 hospital admissions per year for asthma and other respiratory emergencies. Large multi-city and individual city studies found a positive association between ozone and total respiratory hospital admissions, including asthma, especially during the warm season. Among US and Canadian studies, the ozone-associated increase in respiratory hospital admissions ranged from 2-30% per 20 ppb (24 hour), 30 ppb (8-hour) or 40 ppb (1-hour) increment of ozone in warm seasons.

In 2000, the IOM cited sufficient evidence to conclude that allergens produced by cats, cockroaches and house dust mites caused asthma exacerbations as did exposure to environmental tobacco smoke (ETS) in pre school aged children. A 2005 California Air Resources Board report noted that there is sufficient evidence to conclude that ETS causes asthma exacerbation in children and adults (CARB, 2005). That report also estimated 202,300 excess childhood asthma episodes occur each year in the U.S. as a result of exposure to ETS.

Examples of Recommended Indicators/Measures

- **Number of Days & Person-days with Maximum 8-Hr Average Ozone Concentration Over the NAAQS & Other Relevant Benchmarks (By County – where monitors exist)**
- **Annual number of asthma hospitalizations, by age, gender, and geography**
- **Potential population exposure to contaminants in finished drinking water**
 - **Distribution of # of people by mean DBP concentration, by quarter and year**
- **Incidence (Percent) of preterm births and very preterm births among singleton live born infants**

Data to Action

Key Issues for Tracking

- **Reaching local levels**
- **Measuring exposure**
- **Linking health, exposure, & hazard data**
 - **Measuring impact**
- **Utility to stakeholders**



Questions

