CDC's National Environmental Public Health Tracking Network

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Centers for Disease Control and Prevention (CDC)
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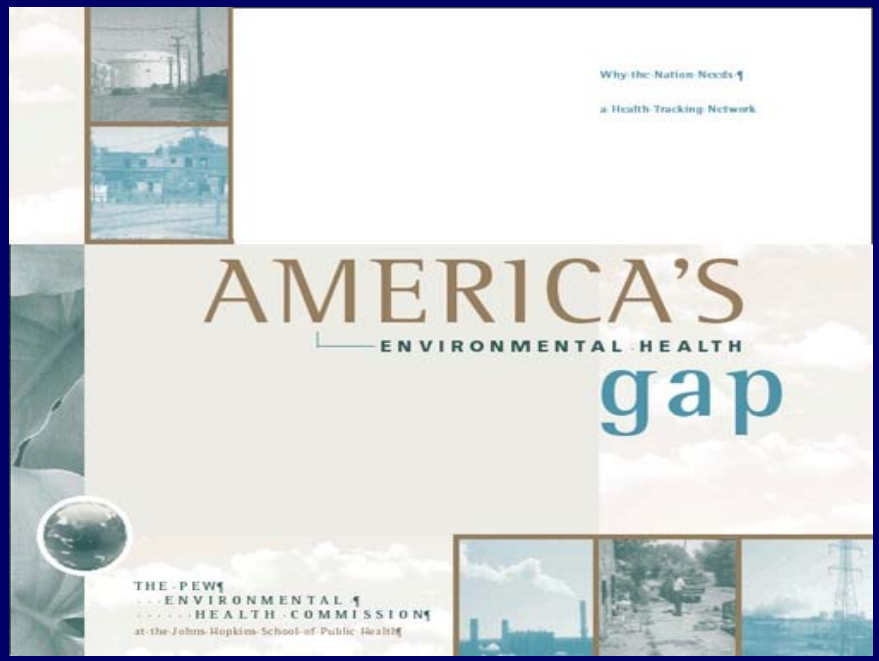
National Environmental Public Health Tracking Program

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



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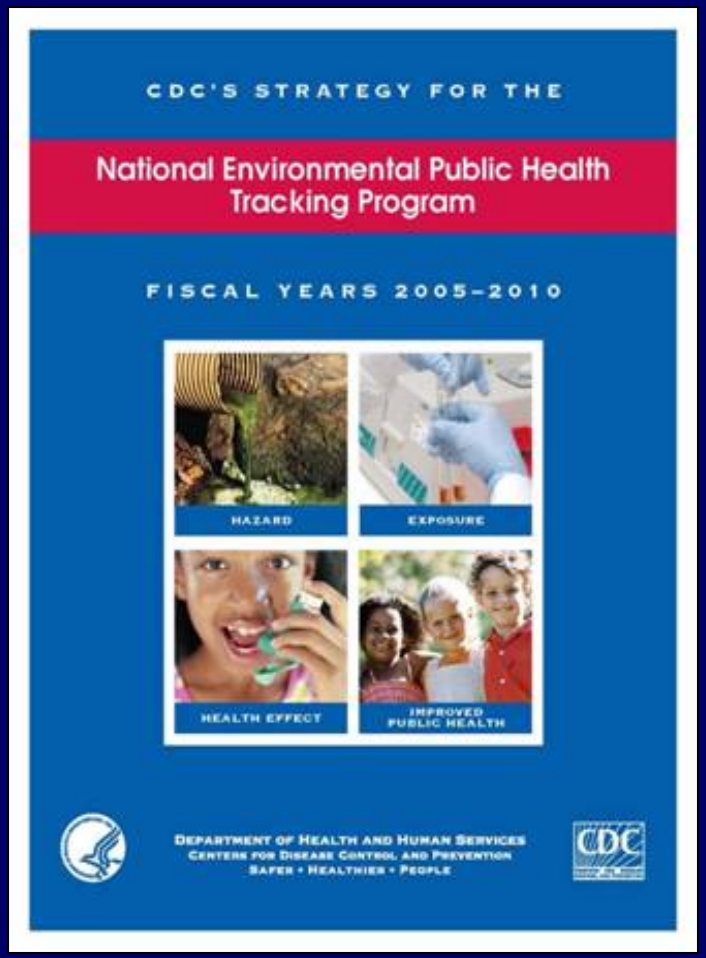
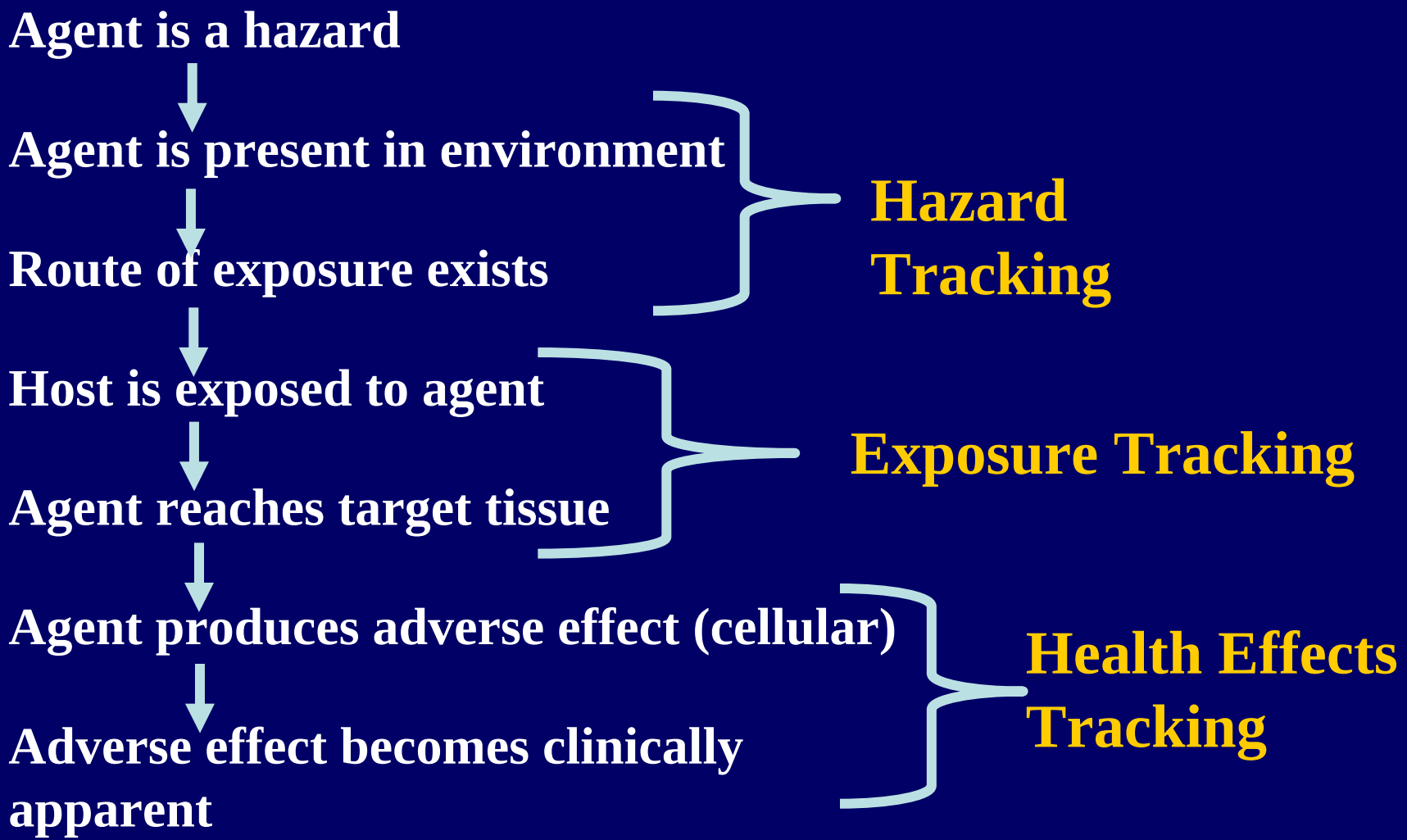


Mission

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

DATA → **INFORMATION** → **KNOWLEDGE** → **ACTION**

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



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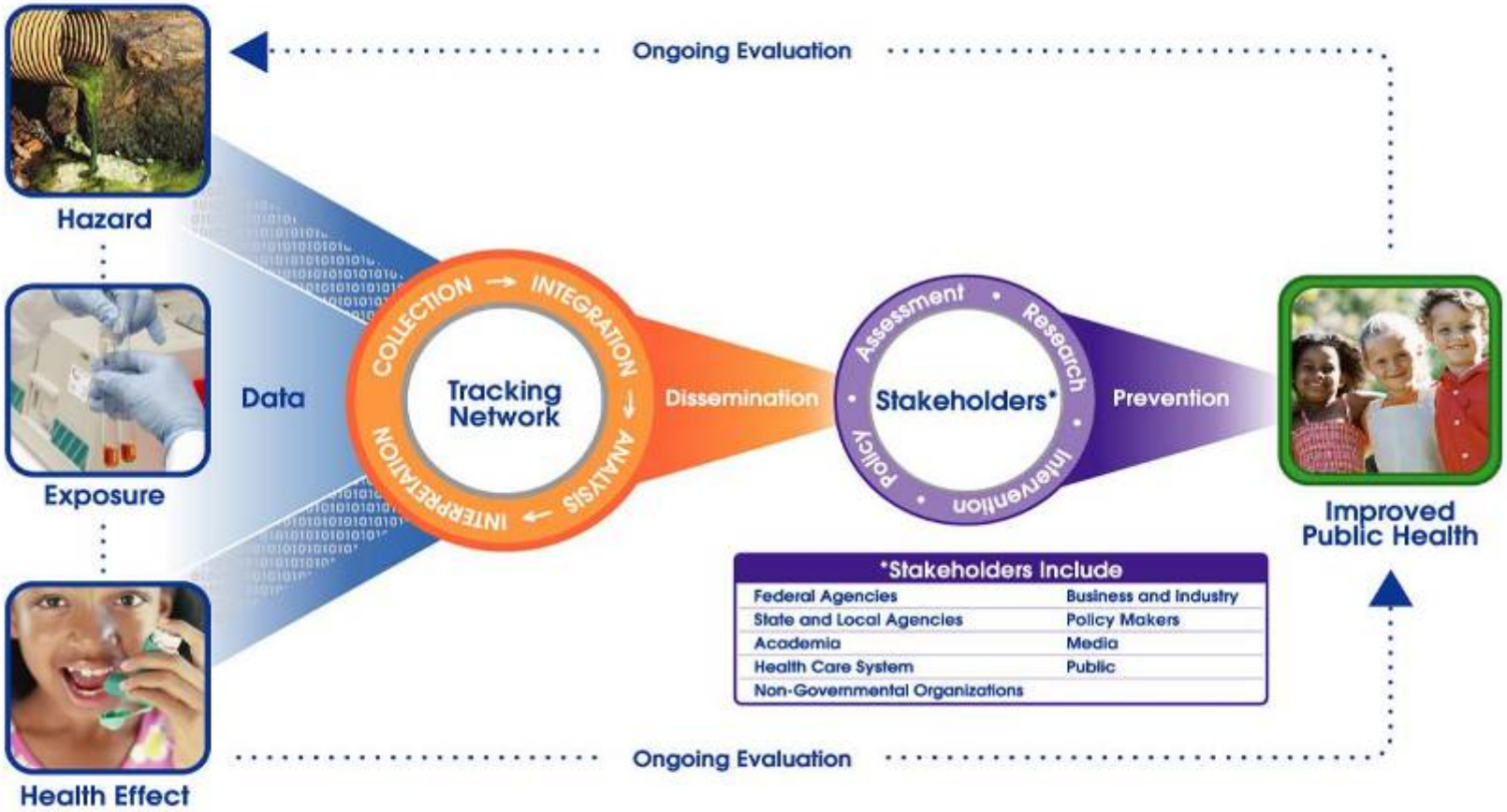
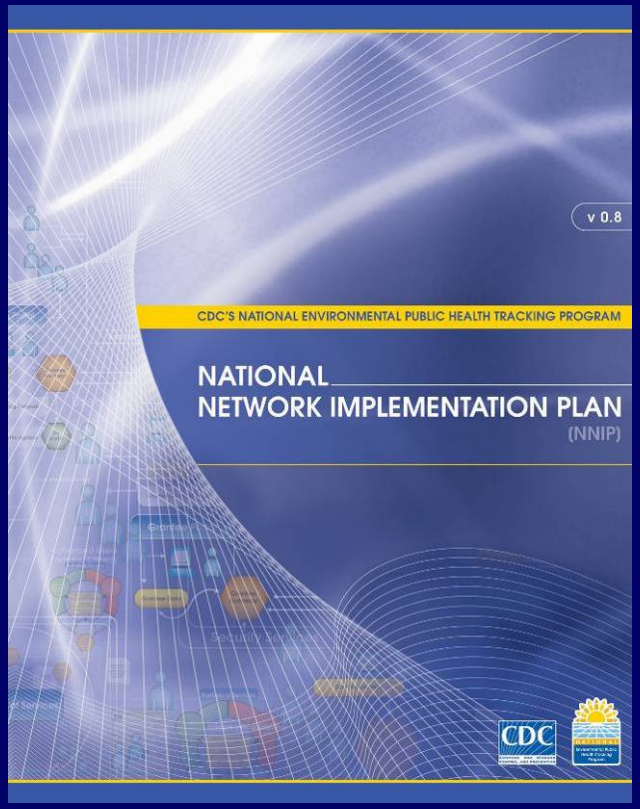
Environmental Public Health Tracking



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

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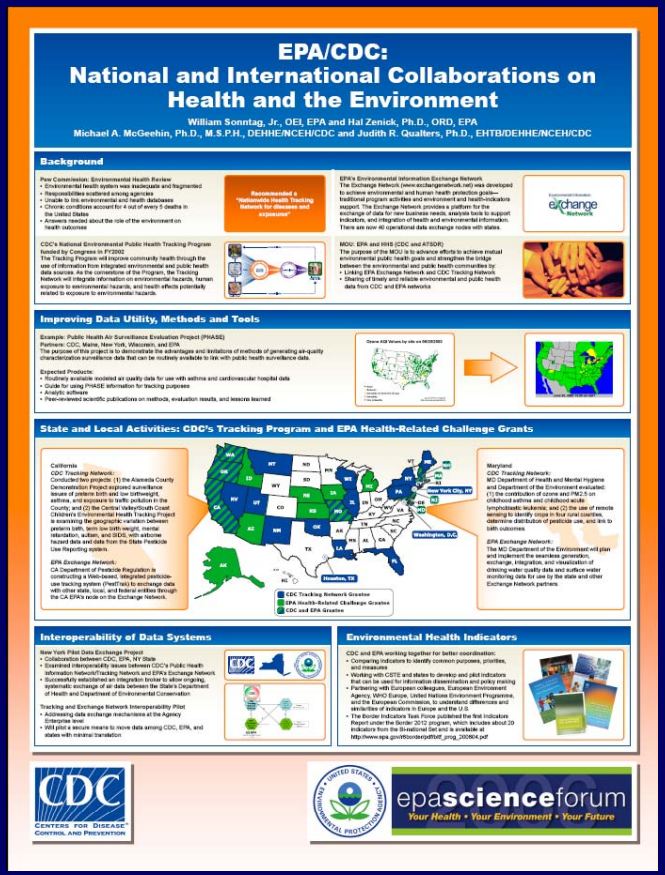
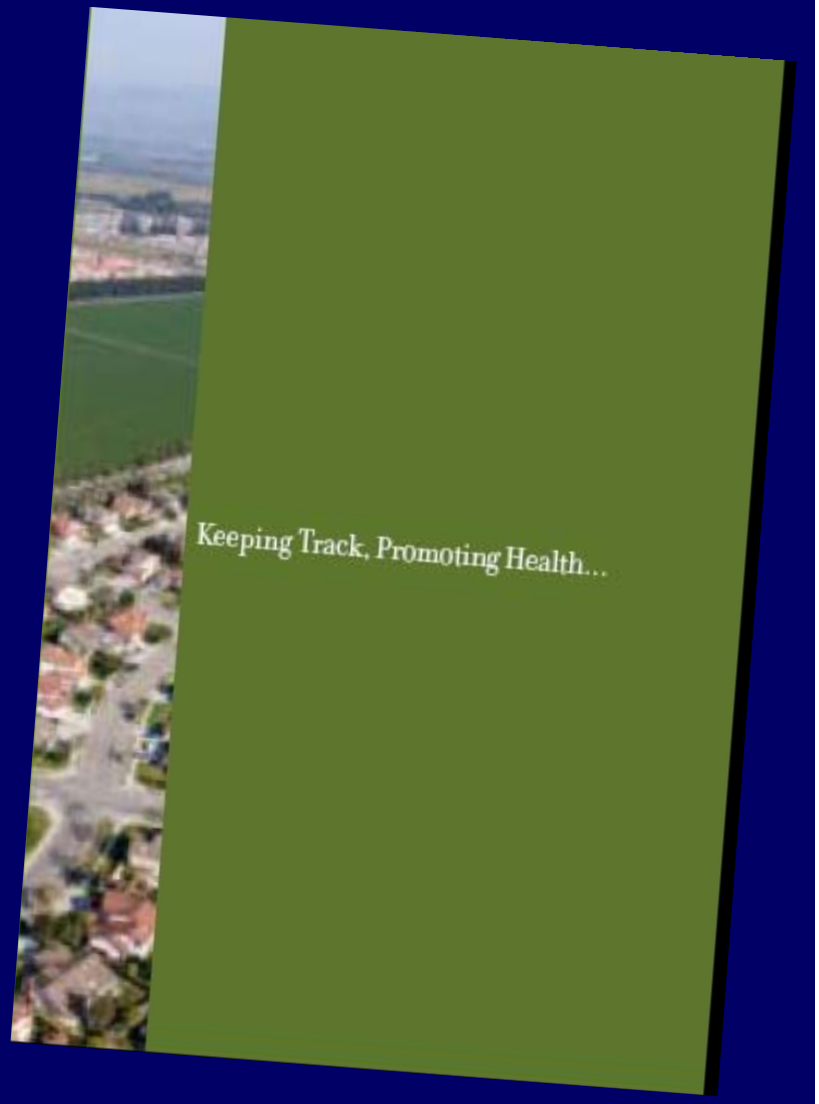
Strategic Partnerships for Developing & Implementing Environmental Public Health Tracking
Other CDC/ATSDR CIOs
Health Care Organizations
NGOs
EPA & Other Federal Agencies
CDC Tracking Program
Universities
Community Groups & Members
State Agencies
Local Agencies

CDC – EPA Collaboration

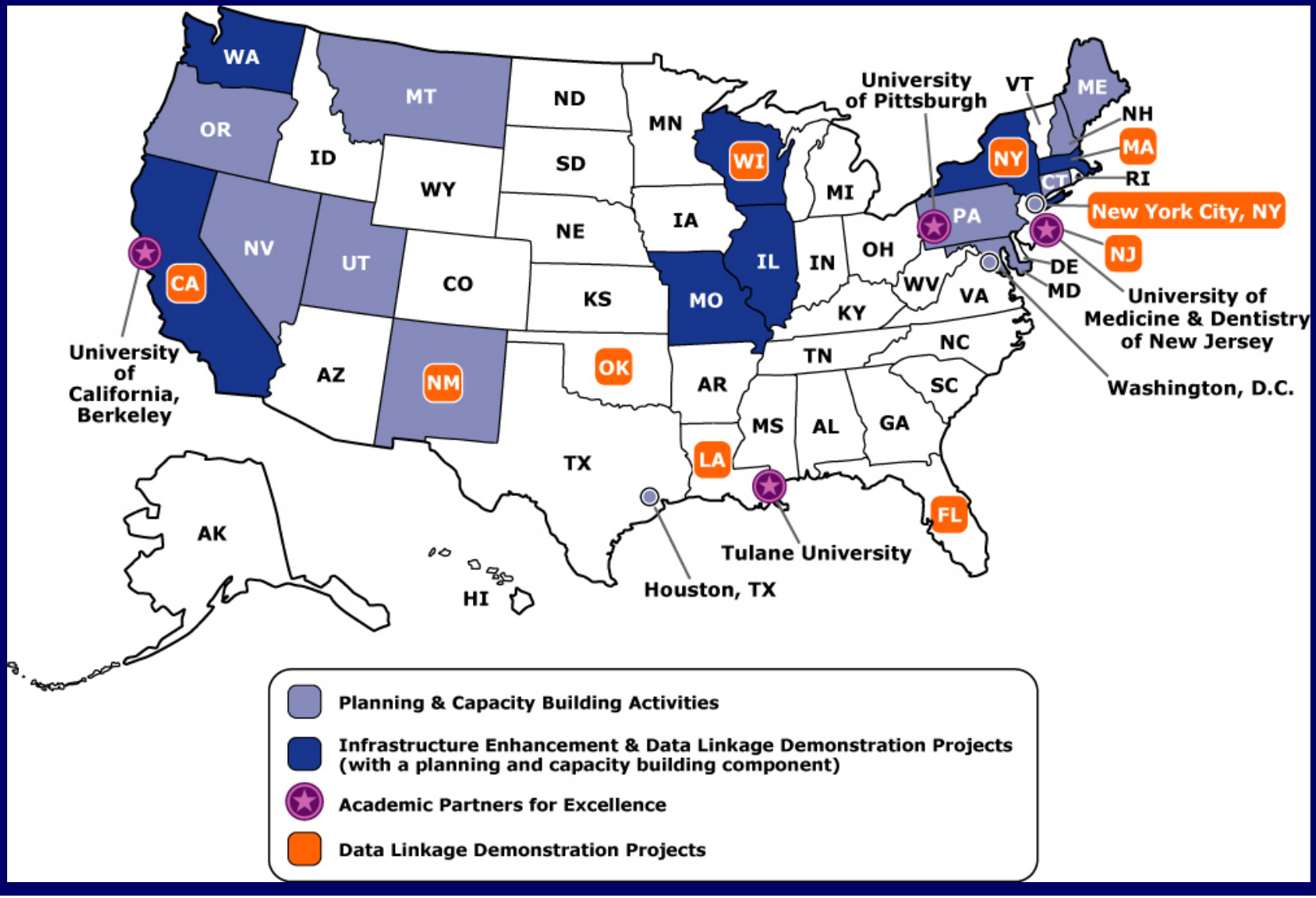


- MOU
  - Strategic Directions
- IAG - air
- Collaborative projects
  - PHASE
  - Interoperability
  - Indicators / NCDMs
- Workshops

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
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

In progress

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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**

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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

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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?

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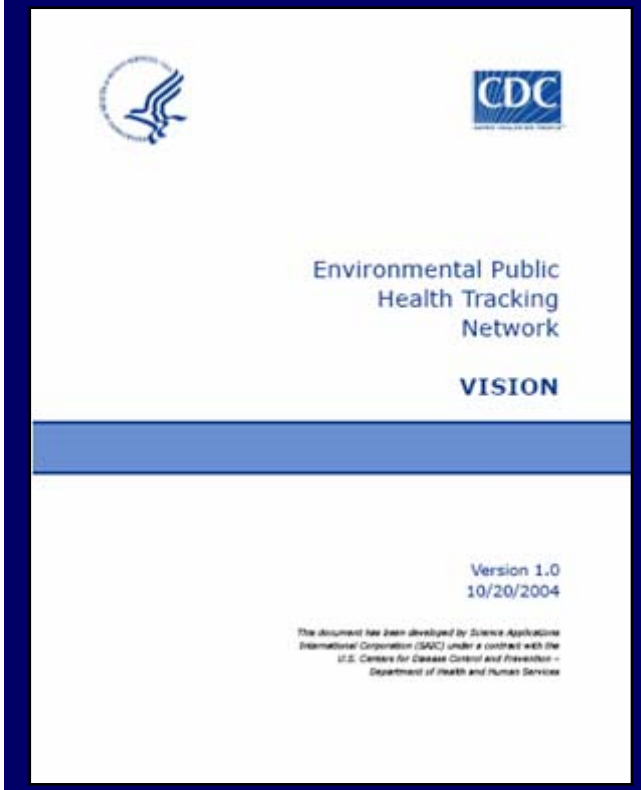
Planning to Implementation



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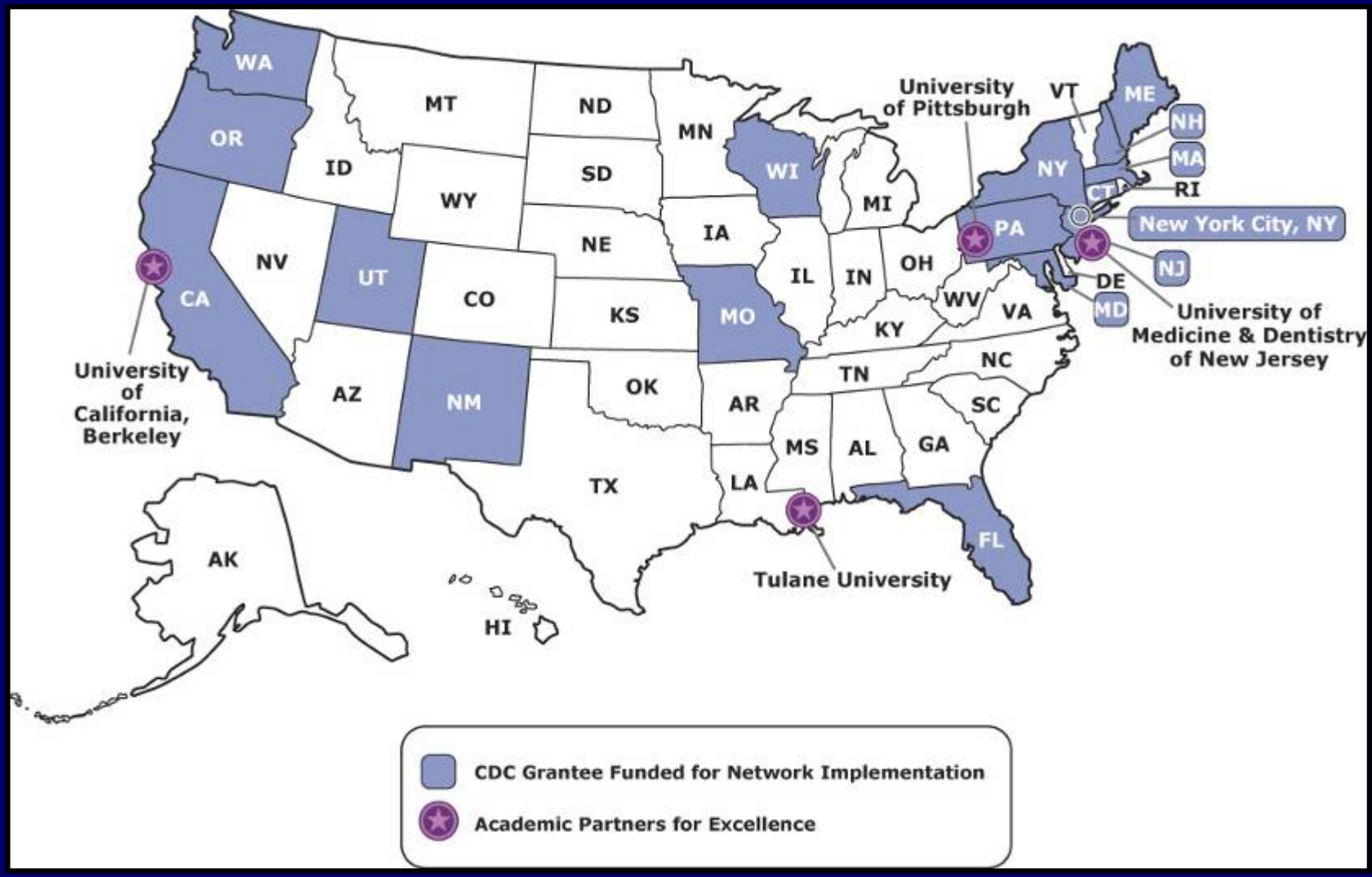
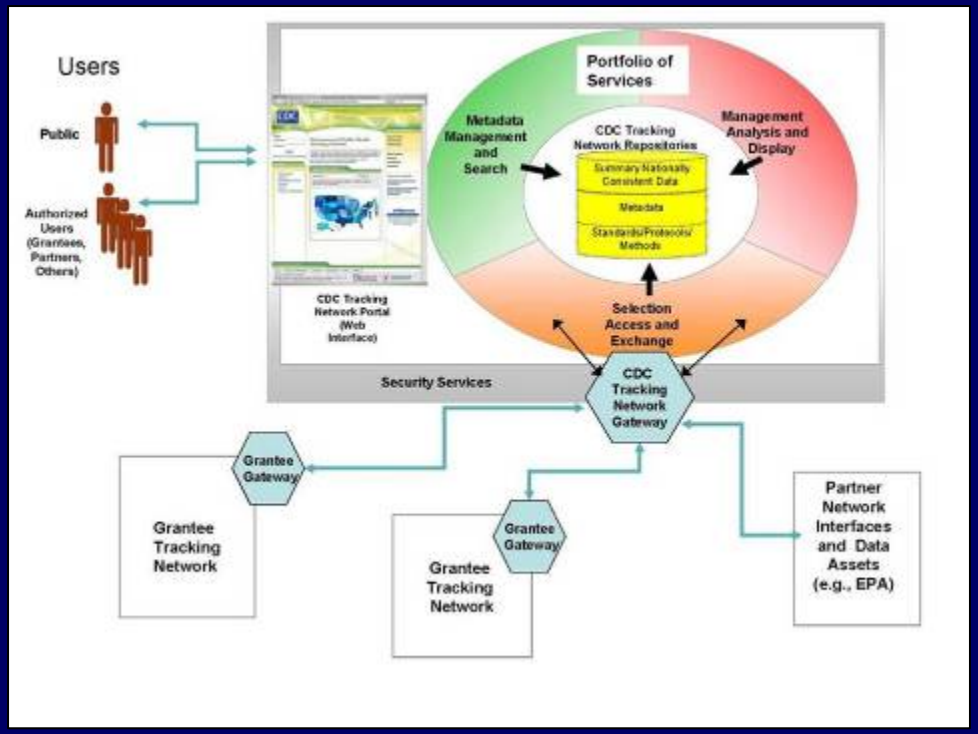
Setting Priorities for Network Content: Tracking Hazard, Exposure, and Health Effects

CDC's Tracking Program Grantees



Tracking Network Implementation

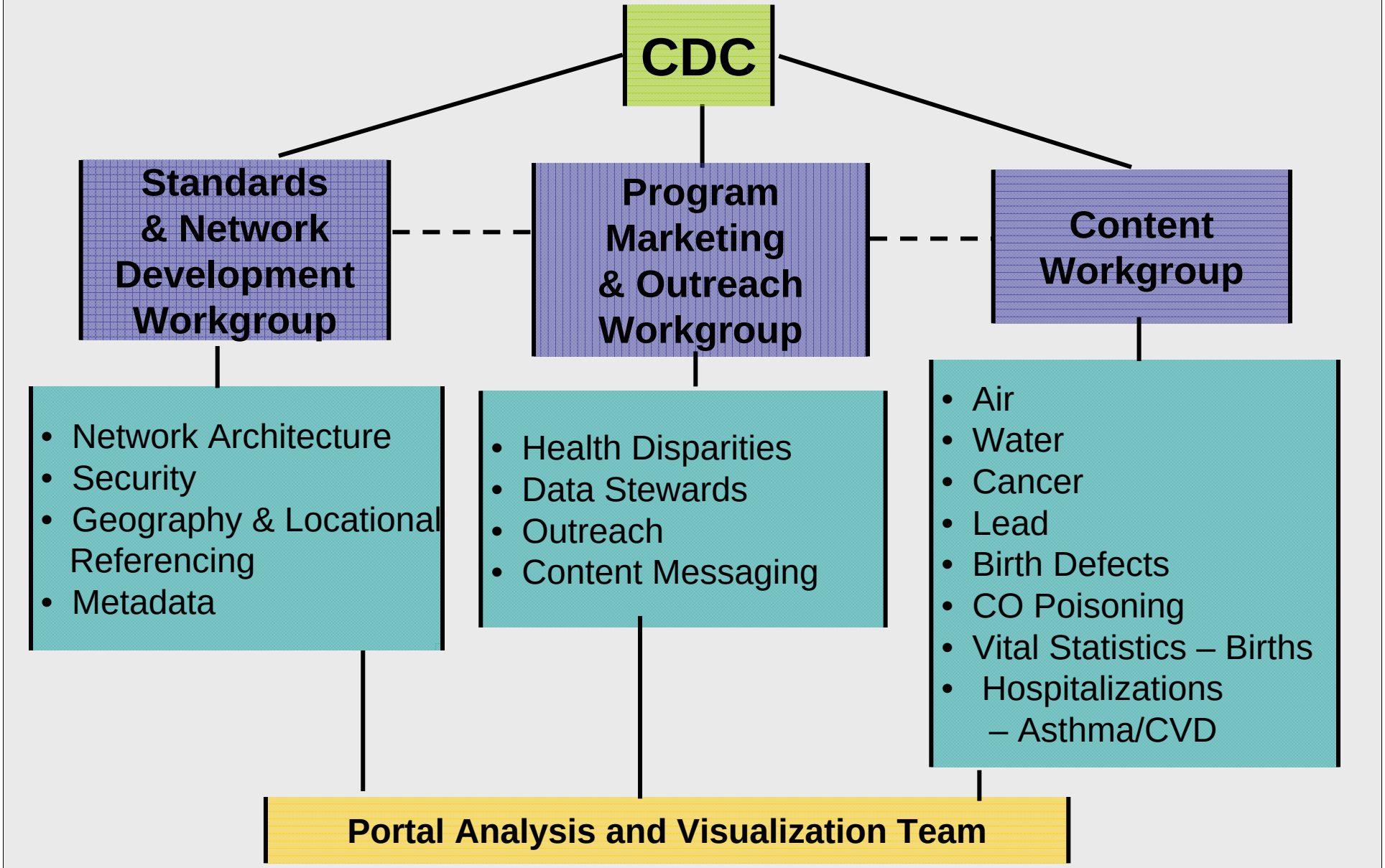
Going "live" in 2008



Functions

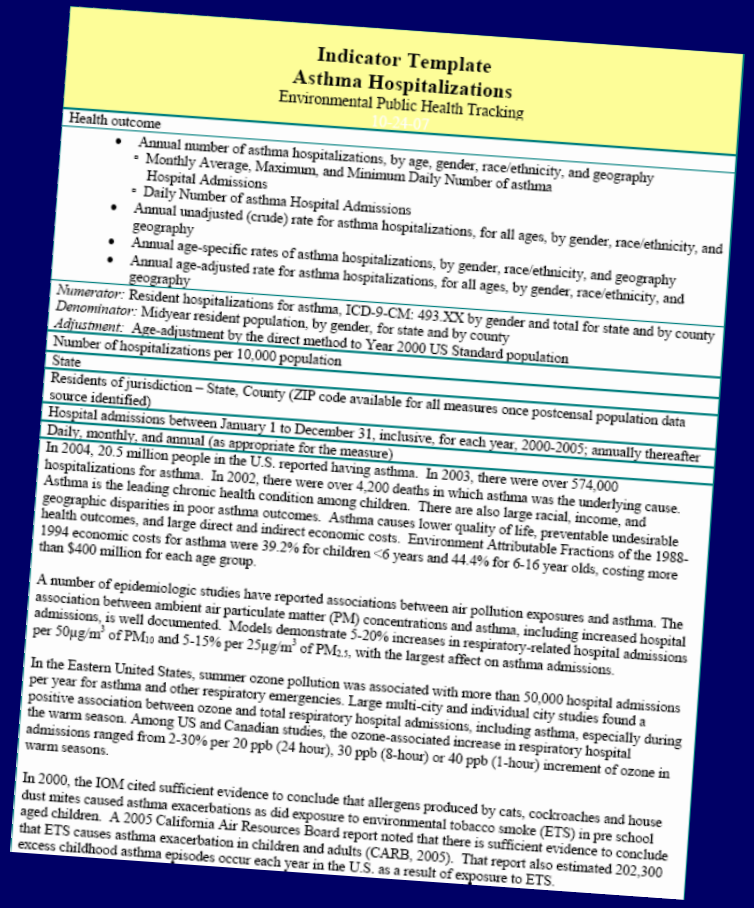
- Compile and provide nationally consistent data & measures (NCDMs)
- Describe and discover data
- Exchange data
- Provide data management, analysis, and display tools
- Inform and interact with the public

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 1988-1994 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 50$\mu g/m^3$ of PM_{10} and 5-15% per 25$\mu g/m^3$ 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

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Data to Action

Key Issues for Tracking

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

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Questions